

COMPUTERWORK

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper - Second-class postage paid at Chicago, Illinois

Vol. III No. 48

December 3, 1969

Price: \$9/year

Anti-War Protestors Erase 1,000 Dow Tapes

By Joseph Haddon
CW Staff writer

MIDLAND, Mich. Over 1,000 tapes at a Dow Chemical Co. computer center were erased in a protest against the Vietnam War. Damage estimates range up to \$100,000.

A group called Beaver 55 took "credit" for the damage. A

Beaver spokesman said that the tapes were used to store data on nerve gases, napalm, defoliants, and other Soviet chemical weapons. "A Dow spokesman denied this charge, however. Jo Ann Mudgett, a Beaver 55 member, explained: "We destroyed information and knowledge that was against people.

The machines were not damaged in hopes that they can be used to benefit people."

Dr. Charles Bowman, director of the Dow Computational Research Laboratory said that the tapes were erased rather than physically damaged. "They are aware what they were doing," he said.

Paul Mack of Beaver 55 said that none of the group worked with computers, but agreed that "some members of the group do know enough to know that tapes can be erased."

Bowman said the group broke in through a door in the early morning of November 8. In addition to erasing tapes, they "made a big mess by throwing around cards and manuals," he said. The laboratory has a Bur-

roughs B5500 and does not work a third shift.

No Dow employees were in the center when the incident took place.

All Dow computer centers are strengthening security as a result of the incident, Bowman said. Here, patrolling has been increased and detecting devices are being studied, he said.

The nine members of Beaver 55 first identified themselves at a Washington, D.C., press conference Nov. 16. They said that some members of the group went to Midland Nov. 7, while other members destroyed I-NA napalm film files at Indianapolis draft boards the same night.

Beaver 55 held a press conference here Nov. 22, and police

arrested five members of the group at that time. They were held in \$20,000 bail each. The other four members were not arrested even though they also spoke at the press conference.

One member of Beaver 55, Michael Bonner, grew up here. But he had never worked for Dow, Mack said.

The New York Times described this city by saying: "Midland is a company town and Dow is the company. The town is in a conservative part of Michigan known sometimes as high country, but not because of its trees."

Mack said that Beaver 55 plans no further attacks. "We got our point across," she said. "Now we want to concentrate on educating people."



Renault Goes Underground

Renault has set up Bell General Electric's time sharing teletype writers in the Saint-Augustin subway station so that Parisians going to and from work can quickly get particulars on the new Renault automobile line. The prospective buyer lists his requirements - color, price - and instantly gets back recommendations including the monthly payments necessary and the nearest Renault dealer.

By Peter F. Carr
CW Staff writer

WASHINGTON, D.C. The computer programming for an increase in Social Security benefits cannot be handled quickly as a practical possibility, according to Social Security Administration, Robert M. Ball.

Ball was replying to a question raised by Congressman James A. Burke of Massachusetts before the House Ways and Means Committee concerning the length of

time it would take to provide the proposed raise in Social Security payments.

Stating that the increases would go into effect on April 3, 1970, Ball explained that converting to a higher level of payments was not a matter of making a simple percentage increase in each present payment.

Change Incompatible

Such an increase would be incompatible with the basic provisions of the program for about half the beneficiaries. A large percentage of the beneficiaries are subject to various special rules, exceptions to rules, provisions for multiple computations

and various interacting provisions that are part of the law.

Neither is it possible, Ball stated, to use the computer programs that were developed for prior benefit conversions. Various changes in record form and content and various improvements in the speed and efficiency of operating procedures have rendered the earlier computer programs virtually obsolete.

Over 250 computer programs are involved in handling this system and unless the needed updating of the roll is done correctly and promptly, monthly payments would involve a

(Continued on Page 4)

ACM Council Plans Proper 1971 Budget, Financial Picture Looks Very Healthy

By Peter L. Briggs
CW Staff writer

LAS VEGAS. A year, properly planned, conservative budget is to be a reality for the upcoming fiscal year, according to a pre-

sentation made to the recent ACM Council meeting, held here following the IJCV.

In addition, it was reported that AIPS income appears to be higher than had been anticipated. A spreadsheet budget approval and presentation cycle are planned for the SJCC, to be held in Atlanta City.

The council voted a strong approval for both George Glaser, ACM treasurer, and Don Madden, ACM executive director, for their work in preparing the initial presentation. The clarity and simplicity of the presentation were attributed to the recent conversion to an actual accounting system and to careful control and organization of headquarters accounts and book-keeping.

The previously used cash-basis accounting system had prevented some of the problems becoming apparent much earlier, the council was informed.

The purpose of this presentation was to have the council establish budgetary guidelines as required by the constitution and bylaws.

The chosen guidelines call for 15% of total revenue to be allocated to reserves to overcome the current \$337,000 deficit. The deficit had been decreased by some \$43,000 since June, Madden told the council.

Of the remaining 85% of total revenue, 40% is to be allocated to the major publications budgets and 40% to headquarters overhead and general operations. The council decided.

With a total projected income of about \$1.9 million, all but about \$50,000 of the total budget will be eliminated during the 1971 fiscal year, Glaser told the council.

Potential Weaknesses

Certain potentially "sensitive" (Continued on Page 4)

Century Users to Benefit From Q-Data's Services

By A.B. Williams

HAWTHORNE, Calif. A new company, Q-Data Corp., has been established to offer NCR users various forms of support, such as languages, utilities library, facilities management, applications software, conversion help, and other consulting services.

Three language packages are ready, or in final stages of development, and some conversion contracts are in process.

The company, partially owned by NCR, currently offers the following language packages:

• Near completion, the company says, is a timesharing Basic package, designed to support 10 terminal users on a 3K Century

100, A 16K package is also in the works.

• Rapid access data retrieval system (Radars) is designed to interact with a data base. This will run in the foreground of a 32K or larger Century with routine batch work running in the background. Simple commands entered through Teletype terminals will give the user the capability of inquiry, change, or add to multiple data files.

• Text editor/office system (Teso) has been developed by Q-Data as an on-line administrative terminal system. It runs in a 24K (or larger) partition of a multiprogramming Century 200 and is designed to be useful in preparation of pre-

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Systems Approach to Urban Planning Urged by Sarnoff

NEW YORK — A comprehensive systems effort to revitalize Washington, D.C., and its environs through a massive pilot program involving housing, transportation, race relations, employment, health, welfare, education, communications, law enforcement, and air and water pollution has been proposed by RCA President Robert W. Sarnoff.

Addressing the fourth annual Computer Age Conference of the National Industrial Conference Board, Sarnoff said, "The time has come for a demonstration project to determine whether the techniques that have succeeded in other fields can be applied to the urban and environmental crisis."

Such a program would, he pointed out, be designed to go beyond physical planning and cut through a tangled maze of interacting problems by using the most advanced techniques of operations research, systems analysis, model-building, simulation, and long-range planning.

He pointed out that the work of planning groups such as the National Capital Planning Commission and the Metropolitan Washington Council of Governments already has laid much of the groundwork for a systematic approach to urban problems.

The project would, of course, be subject to much additional preliminary research because of the massive scale of the proposal, noted an RCA spokesman. "As

far as we know," he said, "this approach has not been tried on a comprehensive city-wide basis in a major city."

No estimated cost figures for the program were available, although he noted, "We assume that it would be in the billions." He recommended that full funding for the program be earmarked by Congress at the outset and carefully phased over the project schedule to assure continuity. He noted that the program could be placed under the administration of existing planning agencies which should be granted stronger authority to deal with all phases of the region's future.

To underline the significance of such a venture, Sarnoff sug-

gested that its first phase might be scheduled for completion in 1976 to coincide with the nation's 200th anniversary celebration.

"The Capital belongs to all our people," he said. "A comprehensive systems effort to revitalize the city... should invoke a nationwide response—a response as broad and enthusiastic as that inspired by the Apollo moon landing."

"As the program progressed," he stated, "it would provide an immense inventory of new knowledge and new methods that could be applied to other beleaguered cities across the nation."

Sarnoff urged that the business

community take the lead in suggesting and participating in such a program, and pointed out that business is in a position to help cover what he described as a deep American prejudice against government planning.

"We can, for example, correct the notion that planning is an attempt to impose a rigid outline of the future and to make reality conform to it," he added. "This is, indeed, a primitive idea of today's systems methods."

Study Indicates Rise in Computer Typesetting Use

LOS ANGELES — A 16-page survey of computerized typesetting recently released by Composition Information Services, Inc. (CIS) indicates that over 1,000 computer systems are currently being used in typesetting applications.

Announcing the results of the study, CIS director Arthur E. Gardner recalled that, "Our first survey, conducted in 1964, revealed a... total of 77... firms. Now, only five years later, this has climbed to 1,093, with users to be found in 49 states and some 30 countries throughout the world."

Compared to last year, the survey reflects a 33% gain in the total number of computer composition installations, the firm stated, noting that special-purpose systems have continued to play a dominant role in typesetting applications. However, they added that in their opinion, "The market for these limited-function devices has now peaked, and subsequent strides will be primarily made in the general-purpose area."

In addition to listing the names and geographic locations of all users, the survey provides a statistical distribution according to printing and publishing industry segments. CIS noted that the comparison with previous studies again showed service bureaus to be the fastest-growing classification of computer users. Newspapers still account for nearly two-thirds of the total, they said, with printers showing a slight decline in favor of publishers.

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DPMA Holds First of Six Seminars on Unbundling

LOS ANGELES Smaller users take most of the beating from, and potential profits are most of the real cause of, IBM's recent decision to unbundle its package of hardware and services, according to panelists at a recent Data Processing Management Association (DPMA) one-

day seminar on unbundling, held here.

This seminar was the first of six designed to provide DPMA members with more information regarding the way in which unbundling affects their company's operations.

Attendees had an opportunity to meet with each of the speak-

ers. The speakers were George J. Ravazzolo, of Advanced Systems, Inc.; Ronald L. Lowe, of Arthur Anderson & Co.; and William J. Bresnahan, of Bresnahan Computer Leasing Co. The seminar discussed the various price structures announced by IBM relating them to various sizes of companies.

Lowe discussed the Custom Contract Service, pointing out that IBM's federal systems division had been making this service available for several years. He emphasized that the key part of the new SE/customer relationship is that of "assistance." He also pointed out that the SE manager is free, and that his time is not charged separately.

have both its education and systems engineering divisions make a profit. Studies to this end were made several years ago, he said.

Looking at the growth of the software field, Bresnahan said, IBM was certainly influenced by the high potential profits available in this area.

Smaller User Suffers

Unbundling under IBM look much less attractive to the smaller user, he added.

This type of user would have to look to other companies when considering upgrading or improving his equipment, according to Bresnahan.

Bresnahan's principle conclusion, and one agreeable to all the other panelists, was that the user is going to have to work much harder to justify new equipment. The user will have to stay with his generation of equipment longer than he would normally have done, barring unbundling.

The other major subjects discussed included costs of the various types of software, and estimated costs for software to various classes of users.

Future seminars are to be held on Dec. 4 at Philadelphia, and Dec. 5 at Cleveland.

Reservations are available through DPMA, P.O. Box 502, Park Ridge, Ill. 60068.

Alexander C. Grove Dies of Heart Attack

NEW ROCHELLE, N.Y. — Alexander C. Grove, a major force in computer standards work, died of a heart attack Tuesday, Nov. 25. He was 47 years old.

Grove was a director of standards for the Business Equipment Manufacturers Association (Bema) and vice-chairman of X3, the American National Standards Institute (ANSI) computer standards committee.

Charles Phillips, chairman of X3 and director of the Data Processing Group of Bema said, "Grove's contributions to the standardization program, particularly in the field of computers and information processing, has been outstanding."

At Bema, Grove's duties included the coordination of technical investigations and consulting services, supervision of activities relating to DPQ standards, and the establishment of various technical committees to implement data processing standardization.

He held primary responsibility for the operation of the DPQ standards program and for U.S. participation in ISO/C97, the international counterpart of X3.

In 1967 he became the secretary of the Information Process-

ing Standards Board. Grove joined Bema in 1968.

In 1967, Grove received the ASTM from the Standards Engineering Society for outstanding contributions to the literature of standards.

Social Security Increase Delayed By Programming

(Continued from Page 1)

large volume of underpayments and overpayments, he said.

In order to do a benefit conversion in a way that will not lead to serious breakdown of continuing benefit payment operations, it is necessary to work out beforehand the computer programming that will handle the changes.

This should be done in a way that will take the new benefit amounts into account, he said. A number of basic steps must

be carried out in implementing the new program, Ball said. They include:

- Validation of the master file requires each of the 25 million records to be checked by computer, but potential problem cases require clerical attention.
- Preparation of conversion computer programs requires skilled computer specialists who also have a thorough knowledge of Social Security operations. There is little possibility of adding programmers.

- Validation of the conversion programs must follow the writing of the programs.

Implementing the mass benefit conversion is the critical operation that accomplishes the benefit rate changes.

- The 250 claims: claim-related, and post-entitlement computer programs must be modified.

- The operating programs must be tested, debugged and validated.

Too little time for planning and for computer programming would mean that the programs would not be fully tested or capable of dealing with anything but the simplest types of cases, Ball said.

Q-Data Corp. Formed to Offer NCR Users Various Forms of Support

(Continued from Page 1)

formatted text material and in on-line file conversions.

Utility Routines

The company is also active in the area of utility routines. Several general-purpose routines have been developed and Q-Data plans to issue an entire library to be available to Century users on a subscription basis.

Q-Data currently has a professional staff of ten people, so orderly growth into the various planned areas has to be the key to its future.

The founders and top officers

all came from NCR, where they held responsible positions in various areas of that company's software planning and development effort.

The new company says that NCR's ownership position is a minority holding, and that Drew National Leasing Corp. of New York also has an equity position in Q-Data.

While no marketing agreement exists between Q-Data and NCR, it appears that the NCR branches have been notified of the new company, and have reacted enthusiastically.

Q-Data is located at 4327 W. Broadway, Hawthorne, Calif. 90250.

ACM Council Plans Budget; Financial Picture Healthy

(Continued from Page 1)

areas were mentioned. These areas would have the most dangerously negative effect on the budget if they were in accurately estimated, Glaser said. They were: ACM 70% income (expected to break even), membership income (4,000 new memberships per year expected), and publication advertising income.

A special detailed presentation of the proposed budget is to be made at the SJCC, Monday, May 4, from 7 to 10 p.m., the budget will be presented to the council, Thursday, from 7 to 10 p.m., the

council will modify the budget and vote on it in its final form, Friday, the council will hold its regular business meeting.

Increased JCC Profits

Tony Ralston, ACM representative to AFPS, said that profits from the Joint Computer Conference were somewhat higher than the amount predicted.

The previously anticipated amount was about \$100,000, but no exact figures were available as to the new estimates. The ACM currently receives about 16% of these profits, Ralston said.



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POSTMASTER: CHANGE OF ADDRESS FORM 3579 to be sent to Computerworld Circulation Dept., 797 Washington, Newton, Mass. 02459.
Weekly Newspaper—Second Class Postage Paid at Chicago, Ill. Published every Wednesday by Computerworld, Inc., P.O. Chestnut, Chicago, Ill. 60646. Send all editorial and subscription material to: Computerworld, 797 Washington St., Newton, Mass. 02459. (617) 332-5656; TWX-710-335-6635. © 1983 by Computerworld, Inc.

Robert M. Patterson, Executive Editor. Neal Winter, National Sales Manager. Margaret Phelan, Circulation Manager. Henry Fine, Art Services Supervisor. Mary Olson, Typesetting Services Supervisor. W. Walter Boyd, Publication Manager. Patrick J. McGovern, Publisher.

Subscription rates are: \$9 for one year, \$20 for three years. Add \$1 per year for Canada, \$4.50 per year for Foreign. Foreign add \$1 per year available on request.

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Medical Dean Calls Computer 'Instrument of Hope'

By Christine Magnuson

CW Staff Writer

BOSTON — "The use of the computer will free physicians' time for procedures which only highly trained medical experts can perform," said Dr. Frederick C. Redlich, dean of the Yale University School of Medicine. In a Lowell Institute lecture, Dr. Redlich expressed his view that the computer is the instrument of hope to solve the problems of efficiently recording, storing and retrieving records of a patient's multiple problems. Rather than fearing that computers will further dehumanize

medicine, Dr. Redlich believes that "the opposite is more likely [to be true] if we let machines do what machines do best and let humans do what only humans can do."

"In a few years, with the aid of computers we might have for the first time really adequate and useful medical recording of histories, examinations, laboratory tests, therapeutic procedures and the reasoning which underlies decision-making in the multiple problems confronting physicians and other health workers."

"The computer will make it possible for much of the an-

amnestic [patient case history] work to be done by patients, assisted by allied health workers," Dean Redlich continued. "Many laboratory procedures can be programmed and the results of such tests, together with the data from the history and physical examination, will automatically help the physician to consider what further diagnostic and therapeutic procedures are indicated."

"Patients and health workers will get used to the new instrument which is polite, reliable and has an infallible memory. I expect that the successor to the family physician will be a specialist whose knowledge will include expertise in clinical computer medicine and high skills in the psychosocial therapies."

Dr. Redlich cited an example

of the computer used as a physician's aid: "In the computerized health examinations of the Kaiser Permanente Clinic the record of a certain patient may indicate that he has diabetes, but that he is unaware of his illness. At the end of the examination the computer will inform the attending physician that he must see this patient at once personally and inform him about his problem."

"At the end of the automated health examination the human health worker must take over. Just as computers can only play an average game of chess and cannot become champions, we cannot expect that they will become clinical giants. However, they perform the tasks which can be automated and do them

with fewer errors than average human beings," he said.

Dr. Redlich's lecture was the first in the series "Doctors and People Talking," sponsored by the 133-year-old Lowell Institute and the Boston University Medical Center. Dean Redlich was previously professor and chairman of the Department of Psychiatry at Yale before assuming his present post in 1967.

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New Products

\$550 Keypunch Unit Said To Equal IBM 029 Speed

ROSELLE, N.J. — A low-priced keypunch unit that can have applications in areas such as providing card output for video systems has been announced by Computral Corp.

The unit has a basic price of \$550. Even with optional equipment to provide output communications, or the capability to function as a full IBM 029-compatible unit, the manufacturer says it will be able to offer the device at prices greatly under those charged by others who offer a product line keypunch.

The punch is in production, with initial deliveries said to be under way.

The basic keypunch consists of an alphanumeric keyboard and a punch unit. Features can be added

to give the full capabilities of the 029 at what the company describes as "minimal" costs.

The machine can also be used for operator training, and for programmers' use in or close to a machine room, the firm said.

Speeds and other card functions are said to be equal to



Keypunch Unit

those of the IBM 029. Computral Corp., is located at 228 Highland Parkway, Roselle, N.J. 07068.

Electronic Mask Making Device Creates Integrated Circuit Master Drawings

WILMINGTON, Mass. — A peripheral device designed to produce photographically precise printed circuit, thin film, or integrated circuit masters will be available for use with Photon's System G engineering graphics system and with paper tape-producing computer systems about April of 1981, according to Photon Inc., computer graphics division.

The device, known as Emma (electronic mask making apparatus), creates output artwork up to 24 by 30 inches. The five mask slides supplied contain 16 images, and they can be changed in less than 1/2 second, claims the company.

Programming for Emma is by Fortran II statements using only arithmetic commands. Emma contains a special optical projector on a high precision coordinate table that traverses beneath stationary photographic film or plates and selects suitable film images by tape command from easily replaceable glass slides containing the masks, the company says.

The price of System G, output device, programming, and either the Photon 713-10G photo-



Electronic Mask Making Apparatus

typesetter or Emma is \$96,000. If both the phototypesetter and Emma are ordered, there is a discount, according to the com-

pany. Lease prices are available from Photon, Inc., computer graphics division, 355 Middlesex Avenue.

Computer Schedule Board Offered

ST. LOUIS, Mo. — A 31-day, 24-hour computer schedule kit is available from Magna Visual Inc.

The kit schedules computer time in 15-minute increments, featuring magnetic components on a 60 in. by 96 in. aluminum framed board with chalkboard



Computer Schedule Kit

green background. The system uses color-coded magnetic strips with write on/wipe off surface. Jobs are color-coded by type, and individual job numbers are entered on the strips.

The complete kit is priced at \$179.

Magna Visual Inc. is located at 1200 Rock Hill Road.

Voice Response System Handles 13 Simultaneous Output Channels

NATICK, Mass. — A new voice response system, called Audikon, is said to offer a 15-word vocabulary, the use of up to 1,024 input telephone units, and 13 simultaneous output response channels at a cost of \$10,000.

For another \$5,000 the user can double the number of simultaneous output channels.

The manufacturer, Synergistics, Inc., says that the system is self-contained and consists of a computer with software, with full digital-analog and analog-digital conversion provided.

The unit may find application in areas including credit checking and authorization, inventory inquiry, and bank account verification. In payroll use, a clerk could receive a voice response to verify changes he had entered from a telephone terminal.

The price of the basic system compares with \$30,000 for the IBM 7772 Model 3 audio response system that offers vocabulary limited only by the amount of disk storage the user is willing to devote to responses.

The Synergistics basic unit stores its 15 words in the com-

puter's core storage, thus eliminating the cost of disk storage as a practical consideration. The low cost is also achieved, in part, by the sacrifice of the high fidelity of some competitive units while still being clear enough for full word discrimination, the company says.

A major advantage of the new unit is that the user is able to make vocabulary changes at his own location rather than having to send the response storage back to the manufacturer, according to the company.

Synergistics, Inc., 10 Tech Circle, Natick, Mass. 01760.

Acoustic Data Set With 300 Baud Rate Serves as Remote Portable Terminal

NILES, Ill. — An acoustic data set that serves as a remote portable terminal for transmitting electronically processed informa-

tion over telephone lines is being offered by ComData Corp.

The ComData 301A set may be used to send data to time-sharing computers and to other terminal devices including teletypes, CRT displays, and card readers, the company says.

Point-to-point portable terminal communication can be established by using two of the acoustic data sets attached to two terminal devices.

The ComData 301A set is available in originate, answer, or switched originate/answer operating modes. It has a data rate of up to 300 baud, and the set has a "loop-back" test feature for use as a diagnostic and maintenance aid in communication systems.

The unit is priced at \$395. A



Acoustic Data Set

discount is available for orders over \$5,000. Delivery is immediate from stock, the firm says.

ComData Corp. is located at 7544 W. Oakton Street,

Optical System Includes Controller and Printer

DAYTON, Ohio — A hardware system useful in order entry applications has been announced for grocery store chains.

Called Rotomark, and offered by Monarch Marking Systems, the system consists of a high-speed optical scanner, an electronic controller for a magnetic tape recorder, and a hand-operated printer to make coded labels that the scanner reads.

The labels contain the desired data bits in a circular pattern, similar to a clock face, and are printed on heavy paper stock with self-adhesive backing. The data is printed in visual and machine-readable format.

When reorder of merchandise is required, the scanner is positioned on the Rotomark label, an optical scan operation is automatically triggered, and data is transmitted through a controller to a device such as IBM's 1907 batch recorder.

The scanner is said to detect up to 18 characters of information in a quarter of a second. After all reorders are on the tape, the data can be connected to a computer via telephone lines for further action by purchasing or shipping departments.

Other possible applications are

retail order entry and industrial inventory control. According to Monarch, the order entry application has been field-tested for 18 months by a national grocery



Rotomark System

wholesaler.

The scanner is priced at \$1,625, plus the necessary electronics to connect with the recorder. The controller is priced at \$1,635. The hand-operated label printer is priced at \$170 and is suitable for printing limited numbers of labels.

An adding machine and a recorder with a magnetic tape cassette are used with the system. Delivery is around 30 days.

The company address is in care of general delivery, this city.

360 EQUIPMENT WANTED

IPS is interested in obtaining a number of 360 systems, CPU's, and components for customers. Among the systems wanted are a 360/400 CPU or system, a 360/501, a 360/95 CPU, and 360/30 32K and 65K systems and processors. Peripheral units wanted include 2311's, 2314's, 2540's, 1403's, 2821's, 2400 tape units and 2803/2804 tape control units. If you have purchased equipment you anticipate selling in the near future, please write or call.

IPS

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Larry Martin of
NCI New York tells how to

"Make duck soup of documentation"

"When a programmer uses the new language, WORK TEN, he gets his documentation done for him. Automatically. Complete, accurate, narrative and up-to-date documentation. And it is available immediately from the first compilation onward."

"It shows definitions of the files used and detailed descriptions of each record type. Field name, picture, edit words, and relative character positions. And a cross-reference listing of where each field is used, changed or printed."

"WORK TEN documentation includes a narrative description of each logical operation, separated according to the time at which each occurs. And print lines are shown in expanded edited format."

"Any programmer can come back to WORK TEN programs at any time in the future and be able to tell precisely what is happening at every stage in every program. The documentation never gets 'cold', even though the original programmer may be long gone."

"Documentation is duck soup with WORK TEN. If you have a taste for duck soup, drop us a note. We will send you information by return mail."

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Editorials

ACM Back on Right Path

The membership of the Association for Computing Machinery can vote a definite "thanks" to the membership of both its headquarters staff and its council for restoring the society to financial soundness in the last ten months.

Last February it was revealed that the organization was in serious danger of becoming bankrupt. The council took emergency action aimed at cutting back all possible expenditures.

The results of this action, combined with a timely shift to accrual, as opposed to cash, accounting, has enabled the ACM to improve its net position by many thousands of dollars since that time.

Since June alone, some \$42,000 has been saved, certainly a significant amount, even for an organization with a \$1,650,000 budget.

Current projections, based as conservatively as possible, made by George Glaser, ACM treasurer, and Don Madden, ACM executive director, indicate that the ACM will be nearly solvent by the end of the next fiscal year, in July of 1971.

Income is planned as minimally as possible.

All these budgeting activities and ideas represent a complete change of policy from previous overly optimistic plans. The obvious need for fiscal responsibility has been met by the current council, with regret of course for its necessity.

Some services have had to suffer, but the net effect will be to save the entire organization. Certainly a worthwhile goal.

Is There a Better Way?

Joint computer conferences become more frenzied and more massive each time they are held.

This year's Fall Joint Computer Conference was no exception. More people showed up than anticipated, more exhibitors were involved than before, and more confusion was created by the sheer size of the show.

Some exhibitors expressed the idea that they could not really justify their exhibits on the sales or contacts made during the show. They still felt that they must exhibit next spring, if only because every one else will be there.

People were walking around the exhibit area with stunned expressions on their faces. The magnitude of the show was beyond normal comprehension.

Perhaps the problem is not with the people attending the conference or with the exhibitors themselves. Perhaps the problem is the idea of a national show twice a year.

Regional shows do not really offer an alternative because the exhibitors are required to spend far more money to exhibit in four regional shows than they would have to spend for two national shows.

One solution suggests itself as a possibility—the development of specialized shows such as the communications equipment show to be held soon. The only exhibitors and companies involved are those displaying communications equipment.

The number of such shows required might be five or six. One show for software and services (similar to the Compo show), a show for data entry devices and terminals, a show for mainframes and complete systems, a show for peripheral devices, a communications show, and a minicomputer show may be the answer.

Technical presentations and papers could be geared to the subject of each show lessening the conflicts between various types of papers.

Attendees could, perhaps, spend only one day at each show while the technical presentations could be spread over two days. Total attendance at each show would be much more manageable than the 40,000 minimum expected for next spring.



'We Don't Need It Because It Hasn't Been Used in Years'

Letters to the Editor

An Answer to Our War Needs: Why Not Wage War by Computer

The logical extension of Gen. Westmoreland's "automated battlefield," as described in the Nov. 5 issue, would be that the computers fight the wars 100%. By means of dedicated hot lines between our computer and the enemy's a war could be enacted in nanoseconds. Wars which now take many years, billions of dollars, and thousands of lives would be eliminated. When a winner is determined all the "bells and whistles" on his computer would be activated while the loser's computer would go into a noncancelable closed loop or wait stage.

Just think of some of the ramifications. Our sole means of military support to underdeveloped countries would be granting them access to a library of war programs, of offensive or defensive as the need appears. Of course, none of these programs would simulate a nuclear war or involve limited capability, strategic atomic weapons. A good source of income to the national treasury would be the sale of minor conflicts on a time-sharing basis.

Now, if only Ma Bell will cooperate and not make the communications too expensive and guarantee the quality of transmission we might be able to resolve these problems in a truly sophisticated manner.

Benton S. Chudnow

Indianapolis, Ind.

User's Guide Manuals Often Prove to be Un-understandable

I was very interested in the letter in your Oct. 29 issue which "Susie Secretary" in which "Susie" complained about the uselessness of the reference manual she was using in conjunction with the computer service her firm was contracted with.

I would like to assure "Susie" that her problem (as far as secretaries are concerned) is not unique. I am the technical secretary of a time-sharing computer utility service firm and we just recently completed a user's guide manual. I typed a good portion of it, helped with the editing, and worked on this book for a considerable length of time—

and I still do not understand a word of it. I cannot answer her problem but I can certainly sympathize with it as I too have to learn the use of the Teletype and will have to do so with direct instruction and by trial and error. Good luck to Susie—she'll need it and so will I.

Ether T.

Prejudicial Statements Don't Help Settlement

In the Nov. 12 issue, James P. Salvant, New Orleans district manager of Com-Tel Network, Inc., and Leonard DeShields, manager of operations at Data Network Corp., New York, discuss various aspects of an impending suit by Data Network Corp. against Scientific Data Systems.

As two of the CTSs who were responsible for maintenance of the Data Network Corp.'s 940, and as stockholders of Data Network Corp., parent company of Com-Tel Network, Inc., we suggest that Messrs. Salvant and DeShields wait the court hearing for clarification of issues supposedly answered by their letters. Any erroneous and prejudicial statements published in a "Letters to the Editor" column will almost certainly not assist the settlement of the dispute.

Robert C. Walczak
Eugene A. Makala

Hackensack, N.J.

More Must Be Done for the Innocent Bystander's Privacy

Regarding "Traffic Survey Tugs" "Straying" Husband" of Page 1 of your Oct. 15 issue:

The fact that the questionnaire contains a disclaimer by saying that it might be in error does give the motorist an "out" as stated by Mr. Dunphy, but I would be more interested in protection for the innocent. I wonder how Mr. Dunphy would explain the disclaimer to his wife had the survey placed his license plate (by error) on some expressway going south, when in fact he had been working in the office until 3 a.m.?

Edward S. Thibodeau

Ottawa, Canada

Viewpoint: What's With Minicomputers?

Minicomputers Do Not Offer Any Alternative for the Businessman

By Peter L. Briggs

CW Software Editor

With the dozens of minicomputers now available, especially after this EXCC, why is it that most of them are actually scientific machines, rather than business-oriented machines?

The companies claim that they are aiming their computers at the business user, not the scientific user, but the most useful aspect of early business machines, the ability to handle variable-length words, is completely absent from these machines.

Design Economies

The economies of designing new computers are based, according to several leaders in manufacturing, on people who have specialized knowledge in such areas as circuit analysis, information theory, and marketing strategy.

Financial Strategy

The president of a recently-formed terminal manufacturing firm pointed out that there is an additional problem—justifying an approach and a product to potential financial backers.

"The idea of a computer designed specifically for accounting and other data processing-oriented tasks does not have the appeal to glamor-conscious Wall Street investors as does a newer faster and more-jagged super-typer," he said.

If Wall Street cannot be integrated, then it becomes very difficult to produce such devices in any reasonable quantity," he added.

So far, only one exception has been brought to CW's attention, and that is Qantel.

The entire principle of the Qantel V has been the elimination of the technological aspects of computer utilization for business data processing.

The unit is inexpensive, at under \$13,000, yet it offers several useful services to a business user, according to those who have examined and evaluated the system.

Marketing Strategy

Marketing strategy presents a unique problem, according to one company marketing vice-president. While the glamor of the minicomputer and the "intelligent terminal" is as strong as it is currently, all that is necessary to produce a marketable device is to create a newer and slightly cheaper computer with any capabilities that are easily available.

This is not, of course, universally true. Many firms do prepare useful, thoughtfully designed machines though the design orientation is still primarily scientific.

Where To Next?

The problems presented by science-oriented machines for business computing become serious when the sizes of programs and data areas are com-

sidered. Much more of the total effective storage, particularly core memory, is required for data when stored as characters in word-oriented machines.

Also, the amount of additional processing needed to translate data into different formats for scientific processing comes near to wiping out the intrinsically higher speed possible for such arithmetic operations, according to a knowledgeable systems designer.

This designer continued by pointing out that the tradeoffs could not be justified on any

processing capability basis, since the processing needs of commercial customers were never considered in the system architecture.

Qantel, perhaps, represents the beginning of a trend toward business-oriented designs. If so, then minicomputers could become a very reasonable means for companies to solve local and remote data processing needs. More pressure on the manufacturers should encourage the trend and further reduce user costs for ordinary business operations.

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By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of as much as 50% can be achieved. Costs drop to as low as \$4300 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM/

360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, pooling, merging and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Naturally, an IBM/360-compatible magnetic tape is also provided with the system, as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Record size is infinitely variable by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different format control programs, all available simultaneously to any and all operators.

LC-720
KeyDisc System

Bring your own data for a demonstration

Logic Corporation invites you to see an operating demonstration of the LC-720 KeyDisc System at the company's premises. Bring your own original data and Logic will provide a reel of magnetic tape of the output of your data from the LC-720 for letter printout at your own computer facility.

To arrange for a demonstration, contact Gary Tischler, Director of Marketing (201) 334-3713

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Although IBM costs more, it's easier to explain if the results don't turn out as expected. After all, how could anything go wrong dealing with the world's biggest supplier?

A lot of people in this business think that's the way management thinks. Trouble is, they're dead wrong.

Sure, your front office wants to buy from reputable vendors. But they won't knowingly pay for more than they get.

That's why more and more computer professionals are looking at the promise of the NCR Century. The promise and the performance. Because there are now enough NCR Century systems in operation to prove our promises. NCR Century users who have replaced or investigated IBM computers support the price/performance comparisons.

Computers so advanced they make others old-fashioned

We've delivered a computer with a new memory concept... new monolithic integrated circuitry... a new disc concept... and new standardization. A computer that lets you process data faster. For less money.

You can rent an NCR Century 100 with 16K of internal memory for \$1,910 a month. Or a 32K NCR Century 200 for \$3,355. Use that as your first benchmark.

Three-way simultaneity is standard on the 100. So you can read and print at the same time program steps are being performed internally. The 200 offers five- or nine-way simultaneity.

What's more, our memory is thin film short rod memory. Ultra-fast, with speed in the 800 nano-second range. Far faster than core memory, at lower cost. (An extra 16,000 bytes rents for only \$375 a month.)

Circuitry is integrated monolithic throughout. With more power and reliability than the hybrids, at a fraction of their size and cost.

Our dual spindle disc unit, standard on every NCR Century, stores and makes instantly available over 8.3 million characters of business information at an average access speed of 44 ms.

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No reprogramming or recompiling as you grow from the NCR Century 100 to the 200 and larger. Just move in a more powerful processor with the same peripherals or

increase throughput with higher speed magnetic tape drives, paper tape or punch card readers and punches, CRAM (Card Random Access Memory) units and remote on-line devices. Go all the way to nine-way simultaneity and multiprogramming. At far less cost than our competition.

Our software is the same new breed, too. Compilers, operating systems, applied programs and utility routines. All written, tested, in use. And all the languages, too: COBOL, FORTRAN, our own NEAT/3.

We'll be glad to give you the names of NCR Century users who say it's the buy of the century.

Also ask for the comprehensive report on the NCR Century prepared by the industry's leading independent consulting firm. It will open your eyes and let you uncross your fingers when you make your computer recommendation. Write EDP Products Marketing, NCR, Dayton, Ohio 45409.



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Time Share vs.



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Only a software-configured machine could do it. The IC-7000 is available in whatever shape you want it, when you want it, with optimum characteristics in any configuration because the hardware is designed and built so the shape is in the software. Immediate process-to-completion. Scheduled process-to-completion. Or multiple use through many terminals on-line simultaneously. No wired-in limitations in any mode.

This is a fourth generation interactive computer with a 256K-36 bit word core. It is the first time-sharing computer to handle overhead in an economical manner while number-crunching tasks are slammed through tremendously fast, optimized areas. Each user has up to 64K words available in core and can control access to his files at security levels up to 'inviolable.'

Search your memory with tight or loose addressing. "Get me all m's with an n and anything with x, y or z." Dynamic time slicing allows programs of self-modulating queue times to pre-set optimums and you can tie into TTY, CRT, Selectric, Friden, concentrators or even other computers. The IC-7000 handles FORTRAN, COBOL, BASIC and assembly language without degradation in any dialect. And you can mix or match subroutines from different

languages within the same program or build your own program language.

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Minneapolis: (612) 926-0706; New York: (212) 661-1834;
Philadelphia: (215) 563-6350; San Jose: (408) 294-7150;
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All software for the IC-7000 was developed in conjunction with Call-A-Computer, Inc.

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But Disadvantages Are Evident

Selected Data Customers Tied To Tandem Office Lines

By Ronald A. Frank

CW Communications Editor
NEW YORK — The critical shortage of communications facilities for computer users here has resulted in the New York Telephone Company interconnecting selected customers with tandem central offices.

Apparently this type of interconnection, which ties subscribers to tandem offices instead of the usual central office, is being tried by Bell companies in selected high density geographic areas as a means of providing extra lines without having to wait for time-consuming expansions of central office facilities.

Although a local Bell spokes-

man stressed that the arrangement has been provided "no more than 20 selected customers," the benefits, if any, for this type of service seem questionable.

Normally, in a large city it is not economical to have trunk lines interconnecting all central offices. Instead, another level of switching, to a tandem office, is used for intracity calls.

Since a tandem office is not a regular subscriber office, there is no equipment to originate a call. This means there is no dial tone or any method to originate a call from a computer center on a tandem line.

Although there is no doubt

that tandem office interconnection provides additional data lines, the absence of access to a specific line is a drawback.

One large time-share user considering the merits of tandem office lines told CW that the absence of a dial-out capability makes it impossible to perform tests on a block of tandem office lines without tying up the entire block or hunt group. "This would be very ineffective for our operations," he added.

A Bell spokesman agreed that tandem office lines are only an "interim solution for heavy traffic users."

"It isn't all we would like it to be. Ultimately ESS (electronic

switching system) and more central office facilities will be the answer," he said.

Since the tandem office arrangement precludes the capability to access a line from a subscriber site, most interconnections of this type are at user sites where one-way incoming calls predominate.

Some time-share data users feel this type of service may be part of a long term policy on the part of AT&T to segregate time-share users into a separate category to justify special higher tariffs to this group.

Bell Picks Users.

Whatever the exact reason; Bell

is currently providing tandem office facilities on a highly selective basis. A phone company spokesman admitted that the service cannot be requested by subscribers because "we are determining who should have this type of line."

When asked whether the tandem office lines were compa-

Communications

ble in cost to other services, the Bell spokesman said that the new facilities are being offered as regularly tariffed individual message business lines that provide users with two-way phone service.

When asked why the user was being charged effectively two-way rates on lines which could be utilized in one direction only, the spokesman added that the tandem office lines were still in the experimental stage as far as their potential usefulness to the customer is concerned.

A check with high volume data users in other metropolitan areas revealed that tandem office interconnection is available in other cities only at the discretion of local telephone companies.

FCC to Amend TWX Tariff For Modem Use

WASHINGTON, D.C. — Upcoming Federal Communications Commission hearings to be held early in January will consider whether the Teletypewriter Exchange Service, FCC tariff 133, should be amended to provide for the interconnection of customer equipment.

The question was raised last summer in a letter to the FCC by Data Access Systems Inc. The letter said in part, that the company questioned "why the TWX tariff still requires the use of telephone company furnished equipment" while other tariffs allow for the connection of customer provided equipment.

It further stated that the current TWX tariff "certainly seems discriminatory since the TWX service utilizes practically the same direct dial network as do voice communications."

At issue is the provision, under current tariffs covering the switched message network, that allows users to employ modems to transmit data over the telephone network. The TWX tariff does not allow a customer to use a non-Bell modem with a teletypewriter unit.

The FCC hearings may be little more than a formality since the Commission reportedly has notified AT&T that it sees no reason why the TWX tariff should not be revised.



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Think about it! What could it mean if you could pick up the phone, call your computer and get your question answered now! Your people could make immediate credit checks, keep track of inventory, find out the latest blueprint revision numbers, get the status of savings or checking accounts, or anything else that's programmed into the computer. How? The Cognitronics Speechmaker! — a multiplexed voice response system. Interfaced with your computer (it's compatible with virtually any computer available), Speechmaker provides immediate retrieval of the vital information that's needed quickly for efficient business management. The Input/Output terminal is an inexpensive Touch-Tone® telephone and the Speechmaker vocabulary of up to 189 words is tailored specifically for each application. Multiplexing allows independent, simultaneous multiple outputs over an unlimited number of lines. Free Demonstration — For complete information and to arrange for a demonstration of the Speechmaker, write or call today.

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December 3, 1969

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Free Conversion Offered To Introduce New Package

By Peter L. Briggs

WESTCHESTER, Ill. — Com Dyn Systems will convert your most complex Autocoder source program to Assembly Language for \$25 as an introductory offer to Auto-Bal, the company claims in announcing its new package.

Even the \$25 is refundable, the

company says, with the first conversion order received from company. With the first conversion order received from the customer, the company will refund the money.

Communications Dynamic Systems, Inc., the developer, claims that its package will convert a source program with 1,000% effectiveness into any S/360

Assembly Language.

In the same sentence, however, the company says that unconverted statements (presumably anything left over after the 1,000% conversion) by type of conversion problem. Potential errors that might result from address modification or indexing are also flagged.

In the service version of the

offer, the company's staff will convert all these "unconverted" statements. In addition, the company will agree to guarantee complete operation of the converted program if it is converted by the company's personnel.

Hardware Requirements

The system will run, the company says, on a 64K 360/40 with either two tapes or two disks. The company also claims that the program will convert an average 2,000-card autocoder source program into AL in from six to ten minutes.

Input may be from cards, tape, or disk. Input records may be blocked or unblocked with output going to the same possible devices.

Optional outputs include a symbol table, a cross-reference listing, an unconverted statement list, and potential trouble statements.

Prices after the introductory program were unavailable from the company.

It indicated, however, that the prices would be decreased based on the size of the job, the number of programs involved, and the percentage of conversion desired.

Based here at 10353 W. Roosevelt Road, the company also offers as a debugging aid a computer-generated flowchart for all converted programs.

Actual Demonstration

In demonstrating the package to the Consolidated Functions Ordinary (Insurance) Users Group, Com Dyn says it took the most complex 2,000-card program from the American States Life Insurance Co.'s program library.

The company says that the conversion was then achieved with 96% effectiveness.

Other Translators

Several translators, mostly in use as services, have been announced recently.

Convert-A-Code, a Baltimore company, and CPU Management Associates Corp., a New York City firm, have been offering the service for about six or eight months.

All the services available seem to have problems when converting programs - using address modification as a method of generating program control information.

Six Applications Packages Available For Fortran IV, Scientific Systems

WEST LONG BRANCH, N.J. — Six applications software packages are available for use on 32-bit word digital computers. The programs are written in Fortran IV, and prices include documentation, support, and training from the developer, Electronic Associates Inc.

KDA, the first package, is written for "automatic analysis of kinetic data and requires a 32K memory. KDA is a general-purpose, integrated set of programs for estimating unknown rate constants and other kinetic parameters from experimental data. The package handles up to 45 unknown parameters, according to EAI.

Optran also requires a 32K memory and is used for complete analysis of linear or non-linear parameter optimization problems. With Optran, com-

plete solutions from initial data specifications to final parameter output summaries can be obtained, and estimates of parameter values that minimize or maximize a function can be generated.

KDA is priced at \$10,000; Optran at \$13,000.

Also offered from EAI are three smaller packages that require from 4- to 7K of memory. Heatran is a general-purpose thermal analyzer designed to solve multi-dimensional transient and steady-state problems in heat conduction, convection, and radiation. Heatran is priced at approximately \$3,000.

Gepol is a generalized processor for command-oriented languages. The cost is \$3,000.

A parallel tangents optimization program (Partan) consists

of an integrated set of subroutines to implement a parallel tangents optimization algorithm in conjunction with an objective or error function obtained from user-generated subroutine. Cost is \$1,000.

Dydlat, a basic Fortran dynamical allocator, is a simple programmer's tool for data management in programs requiring storage and manipulation of large amounts of numerical data or alpha-numeric test information. Dydlat is priced at \$2,000.

EAI is located at 185 Monmouth Parkway.

Billing and Accounts Receivable Added To On-Line Data Management Concept

BOSTON — The on-line data management concept of Geran Applied Systems has been "extended" to provide a billing and accounts receivable service.

To use the Geran service, information is entered directly into the computer through a Touch-Tone telephone. The computer checks entered information, detecting any errors.

All accepted information is retained in storage and reports are prepared and delivered to the customer on a periodic basis.

The cost is five cents per transaction for invoice processing, applying receipts to open items and aging receivables, the company says.

Monthly statements, subsidiary ledgers, aged trail balances, cred-

it limit extension reports, deliveries, and forms imprinting are included at no additional charge, the company reports.

Other Geran services utilizing the on-line concept include payroll accounting, job cost accounting and ledger accounting.

Company offices are located at 677 Beacon Street here.

System Maintains Stock Portfolios

ST. LOUIS, Mo. — A software package called ASRS (automated shareholder record system) has been designed to keep stock activity records for companies or bank transfer agents.

The system uses a shareholder's name and address to store and control each record. ASRS can store historical, operational, and statistical data about shareholders. The user may make direct inquiries about specified accounts or certificates; or multiple variable characteristics associated with a group of shareholders may be indexed.

The system, designed by McDonnell Automation Co., is written in Cobol for the IBM 360/40 and larger models. It requires at least 256K of core memory with disk storage.

The price for the basic package is \$20,000. Included are a one-week week of system support, a one-man week of programming support, and documentation.

McDonnell also will do processing of ASRS for firms.

Processing is done once a week and users can receive printed reports or teletype microfilm.

The processing charge varies with size of job, according to a company spokesman. McDonnell does its processing of ASRS on an IBM 360/65 and 775 ASP system.

According to the company, the system has been in use since May. McDonnell Douglas Corp., parent firm of McDonnell Automation Co., uses ASRS to keep files on its 64,000 shareholders.

System Controls Key-Driven Display Devices for Medium-Scale Processors

NORWALK, Conn. — A system that offers medium-scale data processing users a means for controlling key-driven display devices has been announced by Turnkey Systems Inc.

The Graphic Remote Access Priority Handler & Interrupt Control System (Graphics) uses a common overlay area for single-purpose functions and is written in Cobol. The system operates on a minimum of 24K memory, and interfaces with existing operating systems, according to the developer.

Functions of Graphics include: station start-up, privileged access password handling, page storage and retrieval, priority interrupt queuing by terminal function, process overlay control, system cycle down (for file checkpoint), and standard program interfaces.

A set of data management routines stores intermediate results in a general scratchpad area for convenient retrieval, permitting a program to reside in

the common overlay area. This scratchpad area can be assigned to core and/or disk.

The purchase price of \$15,000 (lease option available) includes three weeks of on-site assistance, a standard access method

(BTAM, OS/Local, etc.), and a sample problem program. Complete user documentation is included, according to the company.

The firm is located at One Eleven East Avenue.

Decision Table-to-Cobol Conversion Package Produces Cobol Source Deck

NEW YORK — A mixed-entry decision table-to-Cobol processor, Decibus, is available from Software Marketing, Inc.

The mixed-entry processor performs two major functions: validation of the logic of decision tables and transformation of the contents of the tables into element-free Cobol source statements.

Decibus is written in Cobol and will be made available to installations whose hardware vendor provides and maintains a Cobol compiler. The processor checks

for completeness, contradictions and redundancies, and each features the Else rule, Rule O, Exit, and Loop verbs.

Decibus sells for \$9,000. A limited entry version has been available for \$6,000.

Software Marketing, Inc. is located at 52 Vanderbilt Ave.

Correction

Advanced Computer Technology, referred to in Problems of Conversion - Part III, CN Nov. 12, should have read Advanced Computer Techniques Inc.



"Let's Not Overlook Their Offer of Green Stamps With This \$1,250,000 Package!"

WHY WE STOCK PARTS FOR A VANISHING BUSINESS.

The unit record business is in such a state that it produces only about \$500,000,000 in annual revenues in this country. Maybe only \$600,000,000.

If that seems like a lot of money for a vanishing business, consider the fact that there are an estimated 600,000 punched card machines now in use at more than 40,000 installations.

A lot of equipment for a vanishing business. And it takes a lot to maintain our share of it. That's why we stock 16,000 parts; why we reconditioned over 3,000 machines during the past fiscal year, and that's why we

have a customer service force of almost 1,000 men and more than 50 service offices.

Sometimes we wonder what it would be like in a business that

wasn't vanishing. But after all this time we're used to it. People started waving handkerchiefs at the unit record business fifteen years ago when IBM brought out the 650. Then it was the 705. Now it's System/3 and we're getting the senior citizen treatment again.

Not that the unit record business hasn't changed. But changed is not gone. Punched card consumption keeps going up every

year. Walk into just about any office and you'll find some familiar tabs and sorters and verifiers still churning away. Still doing the same jobs. Or doing new jobs, such as low-cost computer editing and back-up. Much as the IBM 1401 (remember when that vanished?) is now being used in support of

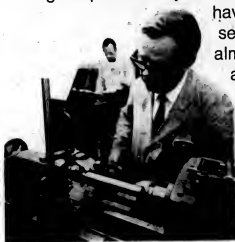
more sophisticated computers.

And if you think the only people left

in the unit record business are the brokers, you are invited to contact one of our sales representatives. He will assess your data processing needs and recommend the right machines for you. You can buy them outright, or you can rent them short or long term. Or both. However you choose to do it, you will probably end up saving money.

The new computers, those high-priced stars, are getting a very noisy reception. Which is as it should be.

But if you listen closely, beneath all the commotion you can hear the familiar sound of the punched card machines. Humming away, getting the work out. And, of course, needing attention. That's why we stock all those parts. They're very important in a vanishing business.



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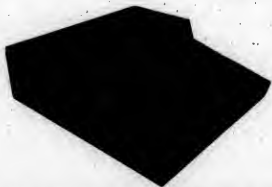
plays the type of error and the corrective action to be taken. All displays are in English, not codes, and ideally positioned for eye comfort.

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Baltimore County Executive Dale Anderson, left, and Eugene J. Clifford, director of traffic engineering, observe improved traffic flow.

Computer Control of Traffic Lights Instituted in Baltimore

TOWSON, Md.—Computer control of traffic signals on the heavily used York Road in Baltimore has been instituted by the Baltimore County Traffic Engineering Department.

In announcing the project, officials reported that use of the computer on the three-mile-long stretch represents the first step in a six-year project aimed at improving traffic flow throughout the county.

By 1975 the computer, an IBM 1800 data acquisition and control system, will control over 100 traffic signals in 13 county communities. This is the beginning of the first digital computer-controlled signal system in

any county in the U.S., according to Baltimore County officials.

Twenty-one traffic lights are now computer-controlled on

Applications

York Road and local streets in Towson.

Recent engineering tests showed a significant improvement in traffic flow with the new system as opposed to the previous fixed timing of signal lights.

"Tests were run during the morning and afternoon peak periods," said Eugene J. Clifford,

director of traffic engineering for Baltimore County. "and we've come up with a 40% saving in time."

"We seriously adopted the idea of using a digital computer in 1967," he continued. "Since the system was installed in February, we have been working toward achieving the optimum selection of patterns so the computer can move the traffic as rapidly as possible."

The electronic traffic control system picks up information on the traffic flow from magnetic sensors imbedded in the roadway at strategic locations. As vehicles pass the sensors' locations, electrical impulses are sent to the computer over telephone lines.

The computer, which analyzes millions of these impulses in seconds, determines what action to take based on traffic flowing on the entire artery, and then evaluates the effect on traffic flow.

The sensors provide data on the number of vehicles, their speed, the lane they are in, and the number of stops they make. The computer can check the traffic flow by individual intersection or by groups of intersections.

"If trouble develops at an intersection, the computer will alert the traffic engineer by a steady signal and he can then investigate."

Fruit Processor Speeds Payment, Lowers Manhours

DAYTON, Ohio—Substantial times savings and new efficiencies have resulted at Paul A. Mariani Co., California fruit processor, with the installation of a new data collection system.

Using the Standard Register Co.'s source record punch in a decentralized keypunch operation, the system has reduced clerical effort and provided faster payment to growers for produce, according to Richard A. Barnes, Mariani data processing manager.

The previous time lapse between a grower's produce being weighed and payment being made ranged between two and three weeks. Now it is down to one day. In addition, 655 man hours are saved.

Once the grower's fruit has been weighed and graded, information is recorded on tags. This data is entered on a key-board and is printed on a unit set tabulating card as well as in punched code form.

The cards are sent to the data processing department to be sorted and a summary card with average weight and total count is keypunched. A report is run on tabulating equipment by grower and by grade sheet. When the grower's accounting office compares total weights with original produce weights, the sheets are ready to be processed for payment.

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- Lack of time to plan and manage it
- Pressure to complete new projects
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- Cost of people, test time, etc.

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The CONVERT-A-CODE SYSTEM is not a software package that you buy or get "free" from the manufacturer. Not a package that still leaves your staff 50% of the work to do. Not a package that requires your source to be 100% up-to-date.

The CONVERT-A-CODE SYSTEM is a unique conversion service which converts 1401, 1440, and 1460 programs to System 360 assembly language.

The key elements of CONVERT-A-CODE are a series of powerful translator programs and an extensive staff of conversion specialists. This combination of software and people guarantees users of the service a 100% conversion to System 360.

We will take your 1400 programs (object or source) and return to you standard 360 source assembly language programs, debugged, fully tested, ready to go on the air. DOS, OS, TOS or BPS.

WHO IS USING IT

The service has been successfully used by major insurance companies, banks, brokerage firms, manufacturing companies, and major service bureaus throughout the United States.

Satisfied users include Firemen's Fund Insurance Co., Crown Central Petroleum, FMC Corporation, Connecticut Savings Bank, James Talbot, Inc., Dominick-Dominick, Tractor Computer Corporation, and the largest service bureau corporation in the United States, among others.

WHY ARE THEY USING IT

Lowest cost per program to convert. Our clients have compared CONVERT-A-CODE costs with the in-house manual approach and the in-house package translator approach, and found CONVERT-A-CODE to be far and away the lowest in cost per program. In addition, the CONVERT-A-CODE charges are total costs including all documentation and computer test time.

CONVERT-A-CODE guarantees 100% conversion for this low cost.

Turnaround time to complete the conversion. Because of the power and effectiveness of our translator and the skill of the team of conversion specialists who complete the work, CONVERT-A-CODE is equipped to handle large volumes of programs in a very short time.

Improved morale of the user's staff. Rather than work on less prestigious 1401 maintenance and conversion work, CONVERT-A-CODE users can devote their staff to new System 360 applications. This often serves to keep staff morale high and allocate their efforts to those new application projects with the greatest payoff.

Excellent documentation. The user automatically receives a complete set of documentation along with his source and object 360 programs as a result of the CONVERT-A-CODE SYSTEM. This documentation includes parallel 1401 and 360 listings, op code cross-reference listings, a data map describing constants, and other materials. Compiling the 360 program will also automatically, of course, give you a 360 label cross-reference as well as various symbol table references. If your installation has an automatic flowchart you can also generate a complete flowchart for each 360 program. Thus, a complete set of documentation has been generated automatically. In many cases the service to protect a significant investment in 1400 series programs which have lacked such documentation.

The CONVERT-A-CODE SYSTEM works from object decks as well as source. It can handle patched programs of 1401, 1440 or 1460 series programs of any language.

The service has been successfully used by major insurance companies, banks, brokerage firms, manufacturing companies, and major service bureaus throughout the United States.

Satisfied users include Firemen's Fund Insurance Co., Crown Central Petroleum, FMC Corporation, Connecticut Savings Bank, James Talbot, Inc., Dominick-Dominick, Tractor Computer Corporation, and the largest service bureau corporation in the United States, among others.

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Old Technique Calculates Data Display Rates

LAS VEGAS, Nev. — A 33-year-old mathematical technique has been dusted off and put to work at IBM's Kingston, N.Y., development laboratory to help designers of new computer displays calculate how fast data will appear on their television-like screens.

An adaptation of a queuing technique devised in Sweden in 1936, far prior to the computer age, has proved faster and less expensive than simulation in predicting the average time it takes computer-generated characters to be converted into images and displayed.

This new application of queuing theory was introduced by IBM system designer Thomas W. Gay Jr., at the Fall Joint Computer Conference here.

When a computer generates a batch of characters for display on the face of a cathode ray tube in a graphic terminal, an involved process takes place in the brief time between generation and display.

"A quick determination of the characteristics of this electronic journey and an estimate of its speed can greatly expedite our work as engineers and designers," Gay said.

Primarily, the new application is a quick and accurate method to analyze multicharacter scan conversion. Scan conversion is the process by which computer-generated characters are converted into images on a display device. A scan converter is the circuitry used to accomplish this.

Gay described the "machine interference queuing model," a computer-related adaptation of an original mathematical queuing model devised in Sweden in 1936. It was then applied in

technique. According to Gay, it is applicable to the analysis of scan conversion, since there is a strong analogy between the character and scan converter and the customer and the server.

When characters are generated by the computer, they must wait in one of a number of queues before they can be "served" by the scan converter, and be converted into visual images.

Through the use of the queuing model, the average response time may be calculated, that being the average time it takes for a batch of characters, in a queue to make it from queuing to visual display. This knowledge gives the designer a good picture of the "traffic" situation and enables him to decide the proper number of scan converters neces-

sary for his particular system.

Accurate Performance

In order to establish the validity of the results produced by the queuing model, Gay used a general purpose simulation system model (GPSS) to simulate the video scan converter. The values obtained by the queuing model and those of the GPSS model differed by less than 10% maximum, indicating that the adaptation provides usefully accurate performance data.

The queuing model method has definite advantages over simulation because preparation of the model is quicker, "machine run time" is considerably shorter (therefore, less costly), and the "time frame" for analysis is shorter.

Applications

Swedish industry to determine how many machines (customers) one setup man (server) could tend without delays resulting from several machines requiring simultaneous service.

The queuing model has since had many applications and is generally accepted as sound

After-Departures Bills Tracked by Hotel's DP Terminal Network

ATLANTA — The Regency Hyatt House is using a network of data processing terminals to reduce after-departure charges, one of the most pressing problems of the hotel industry.

After-departure charges are "signature" purchases, usually for such things as meals or drinks, which do not reach the check-out cashier until after the guest has left. These can add up to many thousands of dollars a year at a large metropolitan hotel and are frequently difficult to collect once the guest has checked out.

The Regency has virtually eliminated the time lag by installing IBM terminals at cashier stations in all of the hotel's restaurants and bars, as well as in the room service and valet departments.

Whenever a guest signs a check, the cashier uses the terminal to signal the hotel's computer room, where a punched card is automatically created.

The card, which records the purchaser's name and room number plus the amount and location of the purchase, is then promptly dropped into the guest file.

Benefits Guest and Hotel

Keeping up with guest charges has been reduced to a matter of seconds under normal workload conditions. In the average hotel the routing of guest checks to the cashier can take as long as a full day.

"The hotel business is one of the few industries that must present a bill on demand," said E.G. Sullivan, general manager of the Regency. "This causes the late-charge problem."

"Other hotels of comparable size to the Regency accumulate, as much as a thousand dollars a day in late charges," Sullivan said, "and part of this amount is never recorded. In a year's time, this could easily amount to a loss of more than \$100,000, and attempts to regain these charges are annoying for former guests."

In contrast, the cashiers' IBM terminals keep the Regency's daily late-charge average below \$200, and some 90% of this is collectible without having to bill separately.

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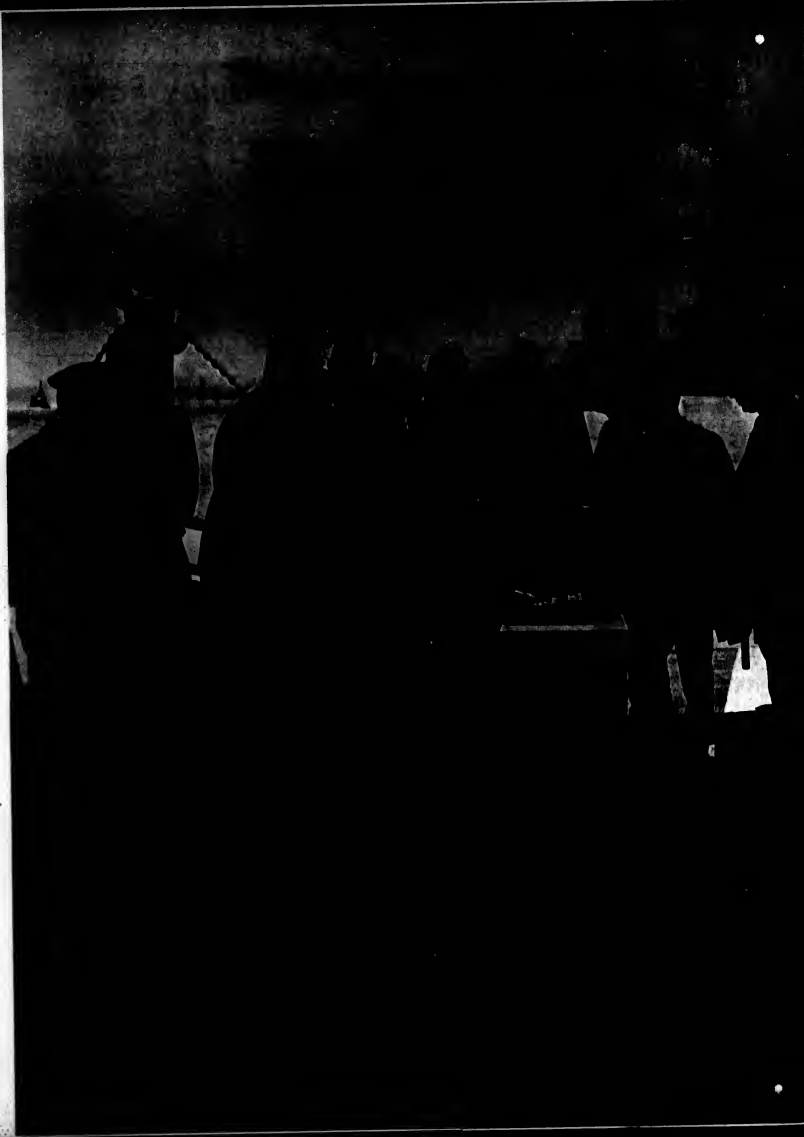
charts, or any other useful engineering, mathematical or business graphics you need. Plot directly from the Teletype keyboard, too, or silence the Teletypewriter and use the plotter alone. It's the end of the graphic time lag.

The HP 7200A is easy to use and requires no special operating or programming/language knowledge. It plots smooth lines, not the staircase drawn by the incremental recorder. And it lets you position the graph where you want it on any type or size of graph paper up to 11" x 17". Talk to your time-share service about

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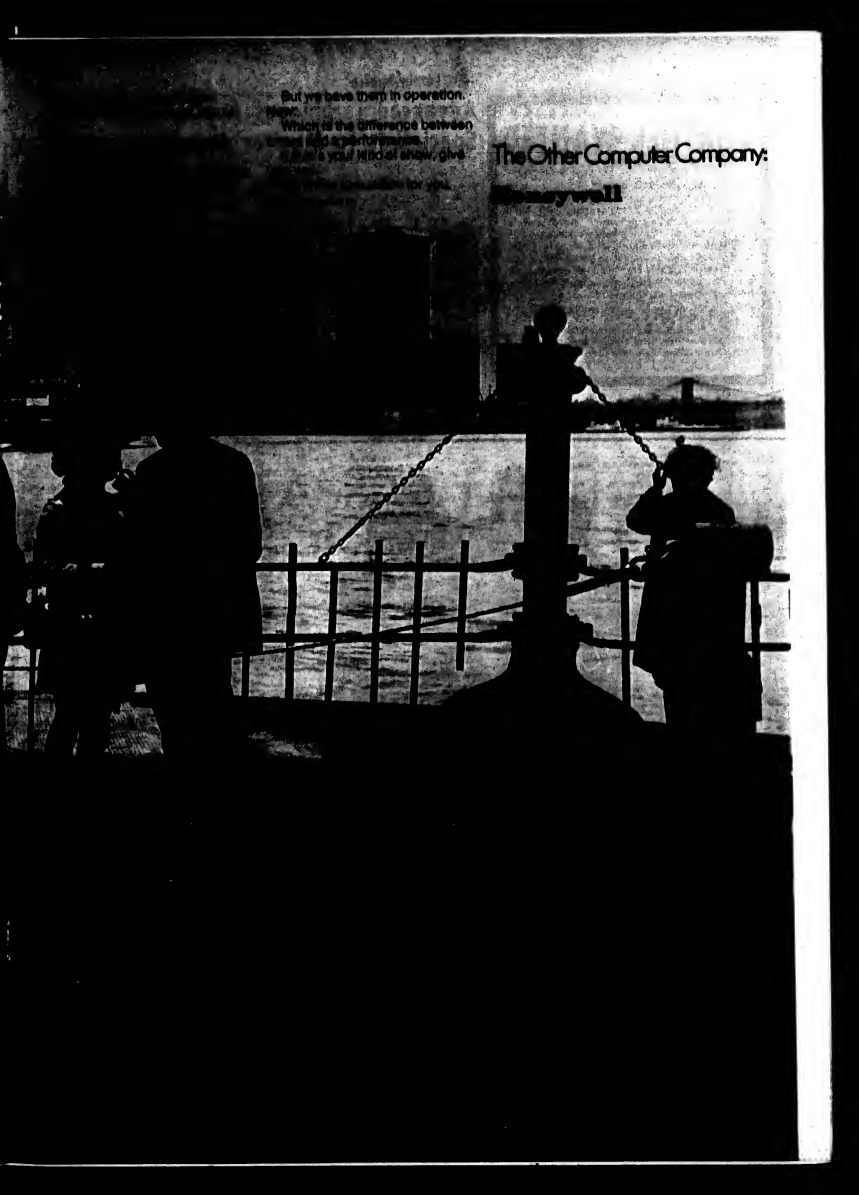
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Advanced Techniques Applied by Rocket Specialists to Monitor Appollo Launch



Remote terminals at many laboratories at Nas's Marshall Space Flight Center are connected to a central Univac 1108 system.

HUNTSVILLE, Ala. — Slowly, almost tremulously at first, Saturn 5 lifts the Apollo spacecraft from the launch pad at Cape Kennedy. At Nas's Marshall Space Flight Center some 700 miles away, scientists and engineers who created the world's mightiest rocket watch its climactic life.

Supporting the rocket specialists a short distance away at the center is one of the most complex computer systems yet devised. It consists of three Univac 1108 processors, each of which can make over one million calculations per second, united into one system which can handle many incoming streams of information at the same time.

The Marshall officials, who follow missions in an area called the launch information exchange facility, monitor real-time data showing how Saturn's structure is standing the forces of launch, how its propellants are being consumed, exactly what trajectory the rocket is following, and its speed.

The data originates on the rocket, which carries thousands of sensors, including television monitors, showing, at every moment, the critical condition aboard the mighty vehicle. Immediately processed by computers at the Kennedy Space Center and tracking stations, the information arrives at the Marshall Center over microwave transmission lines.

Handle Many Programs

The 1108 multiprogramming system converts the incoming data to the necessary engineering formats which are shown on the scientists' television-like screens, graphical plotters, and teletype printouts. The data can be displayed in up to 50 formats.

Apollo support applications were among the first and most critical functions converted to Marshall's 1108 system, which has been used on every launch since Apollo 10. The multi-processor also analyzes Apollo mission data before and after flights.

The Marshall system is the first 3 x 2 (three processors and two input/output channels) system to use the advanced Exec 8 program. It is connected to many remote terminals located in laboratories and many management offices at the center.

Data Processing Tasks

Among the terminals are Univac 9300s and Univac 9200s. Uniscope 300 visual communications terminals, Univac 1558 graphic displays and Univac 1557 display controllers. Using Exec 8, the 1108 system can process data from 20 of the terminals simultaneously.

Data processing tasks include scientific and engineering calculations connected with designing launch vehicle and flight programs, hatch data processing, general purpose computing through the remote terminals, process control applications, on-line commercial applications, and conversational (demand) remote processing.

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Pennsylvania Educational Users Establish Time-Sharing Network

LANCASTER, Pa. — The Middle Atlantic Educational and Research Center (Merc), a 10-member, regional time-sharing computer network, has been formed to provide third-generation computing capabilities to a consortium of relatively small, educational and administrative users here.

Hub of the Merc complex is an

New Consortium To Combine EDP Facts, Facilities

COSTA MESA, Calif. — The California Educational Computing Association (CECA), designed to promote shared information and facilities dealing with computers in education, has been formed by schools, colleges, and nonprofit organizations throughout the state.

The association also plans to provide instruction in many aspects of computer-based educational services and to develop or contract for the development of new facilities, techniques, processes, or services in several aspects of educational computation.

Consortium members will have access to the programs, services and expertise of other members in this cooperative venture. This interchange, the association hopes, will allow members to take part in innovation and the development of quality programs not possible on an individual basis.

A two-day symposium is planned by the group for Jan. 29-30 at Orange Coast College here, with more than 300 educational representatives expected to attend.

Discussion topics for the meeting will include computer-aided instruction; administrative data processing; uses of computers in instruction, teleprocessing educational systems; and educational computer networks. Plans call for the demonstration of several members' operational systems through remote terminals.

About 40 schools and a few government agencies now belong to CECA, and the consortium plans to invite all California schools, colleges, and universities to participate.

Chairman of the executive committee is Dr. John Hopperston, Cal Western University, 3902 Lomaland Drive, San Diego, Calif. 92106.

RCA Spectra 70/46, said to be the first time-sharing utility set up in the Middle Atlantic states specifically to handle the computing needs of small educational, research, and other institutions.

Headquartered at Franklin and Marshall College, the alliance links participating members to the computer by telephone lines. As many as 32 users may use the system simultaneously, either at the installation or from terminals located at the member institutions.

Project director Andres Llana Jr. says he expects Merc membership to grow as other educational and research institutions, municipal governments, and

small businesses recognize its potential.

Current members are located within a 50-mile radius of Lancaster. Future expansion may extend the alliance to three additional states, Maryland, Delaware, and parts of New Jersey, as much as 100 miles away.

The 10 founding members are Albright College, Franklin and Marshall College, the City of Lancaster, Valley Forge Military Academy and Junior College, Juniata College, the research institute of St. Joseph's Hospital, the Manheim Township School District, the research institute of the Lancaster Cleft Palate Clinic, Lebanon Valley College, and Wilson College.

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**Instrumentation Fair Scores in D.C.;
Second Showing Planned for California**

ENCINO, Calif. — Instrumentation Fair, devoted exclusively to "electronic instrumentation and related products and services, will come to the West Coast in 1970.

According to IF spokesman,

Societies

the enthusiastic manufacturer, representative and attendee reception to the show, which ran

in Washington, D.C., in 1968 and 1969, has pointed up the need for a similar exhibition in California.

Instrumentation Fair will run Feb. 18-19 at the International Hotel in Los Angeles, and Feb. 25-26 at the San Mateo Fairgrounds, just south of San Francisco. It is expected to draw over 3,000 attendees and over 100 exhibitors at each location.

Designed to attract technically oriented buyers of instrumentation equipment and products, IF will feature the following product categories: measurement, computation, data acquisition, calibration, control, communication, data transmission, and maintenance services.

Exhibits and exhibitor workshops will be directed toward prospects who specify, purchase, and use small computers, peripheral equipment, laboratory test equipment, microwave devices, data systems, and production test equipment.

Many exhibitors will conduct one-hour application workshops in which their products or product applications will be presented to groups of up to 50 people.

A no-host cocktail party for manufacturers, salesmen, representatives, and customers will be held on the final evening of each show.

Further information may be obtained by contacting Art Woolbel, Larry Courtney Co., 16400 Ventura Blvd., Suite 301, Encino, Calif. 91316.

**Asdic Explores Facets
Of Handling Science Data**

CHICAGO — The Association of Scientific Information Dissemination Centers (Asdic) has been formed by a group of data processing centers representing university, nonprofit, and industrial organizations.

The association's goals include: promoting the applied techniques of information storage and retrieval as related to large data bases containing bibliographic, textual, and factual information; sharing experiences and information through meetings, seminars, and workshops; recommending standards for data elements, formats, and codes; and promoting research and development for more efficient use of varied data bases.

During the past year, the organizing committee for the association has conducted four workshops dealing with search

programs, costs and marketing, profile development, and bibliographic standards for data tapes.

Problems Need Thought

Announcing the group's formation, Eugene S. Schwartz, chairman of the organizing committee, stated: "Among the problems that require consideration are those of marketing and user education techniques for evaluation of services; cost assessment; leasing and royalty arrangements; bibliographic, coding, and format standards; and the nature of the relationships that are evolving between information centers and government, professional societies, universities, and commercial organizations."

Both full and associate memberships are available. Further information about the organization may be obtained from Eugene S. Schwartz, ITT Research Institute, 10 W. 35th St., Chicago, Ill. 60616.

**Microfilm Study
Indicates Great
Growth for COMs**

ANNAPOLIS, Md. — A recent survey by the National Microfilm Association (NMA) projects great growth for the industry and indicates a rise in the use of computer-out-pul-microfilm (COM) devices to speed the recording of computer output.

The survey of the association's membership was conducted by NMA board member Don M. Avedon. It projected, he said, that more than 1,000 COM recorders will be in operation by the end of 1970 — almost four times the number in use at the beginning of this year.

Two-Year Preview

In addition, it indicated that 38% of the organizations now using COMs plan to acquire additional units within two years; that 105 organizations plan to install their first COM recorders within two years, and that 55 respondents are studying the feasibility of COM systems.

Avedon said that at the beginning of 1969, about 300 COMs were in use, 60 of which were being operated by systems service companies.

The survey also concluded that most COM users are employing the image count retrieval system and that the average COM system produces 24,000 pages of hard copy per month.

In an article accompanying the report, Avedon noted, "The effect of combining microfilm and the computer in a system for information handling may turn out to be more dramatic than the individual impact of either."

amtwtw calendar amtwtw

Dec. 4-5, New York — A Brandon Systems Institute seminar entitled "Data Base Organization and Management," and in Chicago a seminar on "User's Guide to Systems Development." On Dec. 8-12 a New York seminar entitled "Basic Business Systems Analysis," and in Washington, D.C., a seminar on "Programming Techniques for Improved Performance." Contact: Brandon Systems Inc., 1700 Broadway, New York, N.Y. 10019.

Dec. 9-12, Baltimore — Boston Computer Software Corp. announces seminars featuring Documentic, the automatic English language documentation system for IBM System/360 programs. Qualified corporate managers will have the opportunity to see their own installation programs documented free at the seminar in Baltimore on Dec. 9, Washington on Dec. 10, Chicago on Dec. 11, and Boston on Dec. 12. Contact: Boston Computer Software, 15 School Street, Boston, Mass.

Dec. 10-11, Washington, D.C. — Computer Learning & Systems Corp. will present a seminar in "Computer Performance Measurement and Prediction." Also in Los Angeles on Jan 12-13. Contact: Robert Hanley, Computer Learning & Systems Corp., 12303 Twinbrook Parkway, Rockville, Md. 20852.

Dec. 11-12, San Francisco — A meeting on "Network Oriented Project Management Systems," given by X3.6.6 Task Group, American National Standards Institute, Inc. Contact: John M. Rubens, General Dynamics/Electronics, 1400 N. Goodman St., Rochester, N.Y. 14609.

Dec. 11-12, Los Angeles — "Simscript 11" given by Philip J. Kiviat, "Simulation for Decision-makers" on Dec. 11, and "CPSP or Capital Investment Analysis" on Dec. 12 are three seminars being given by Simulation Associates Inc. as a follow-up for the Third Conference on Applications of Simulation. Contact: Arnold Ockene, vice-president, Simulation Associates Inc., 600 North Broadway, White Plains, N.Y. 10603.

Dec. 15-17, Washington, D.C. — Control Data Corp.'s Institute For Advanced Technology will hold a seminar on "Computer Operations for Third Generation Computers" and "Multimedia Information Systems." In Chicago on Dec. 8-10 a seminar on "Data Analysis" and on Dec. 17-19 in New York City "Specification Review and Final Analysis in Timbering Systems." Contact: Control Data Corp., Institute for Advanced Technology, 5272 River Road, Washington, D.C. 20016.

December 3, 1969

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Data General Blasts Off

NEW YORK—Data General Corp. is a computer company that has reported only losses. However, when the 250,000 common shares of Data General offered at \$14 by Bache & Co. hit the market, traders quickly bid up the price as high as \$51.50.

In its first 5-1/2 months to Sept. 30, 1968, DGC had a loss of \$104,927, and it posted a deficit of \$268,050 in the year ended Sept. 27, 1969.

As of Oct. 4, the company said it had \$19 million of orders released for production and an additional \$3 million of orders that hadn't yet been cleared for manufacture.

Data General makes a mini-computer line consisting mainly of the Nova and SuperNova computers. Recently the company delivered its 100th Nova.

Sears' Takeover of Computer Usage Co. Deferred for Further Study By Sears

By A.B. Williams
Cov Staff Writer

CHICAGO—Action on the proposed takeover of Computer Usage Co. by Sears-Roebuck has been deferred, according to the giant retailing organization.

Negotiations were originally announced on Oct. 31. That date the stock of CUC went up 5-1/2 points, closing at 17-1/2 bid. On Nov. 20, the swing went the other way, from 16-1/2 to 10.

The terms of the proposed transaction were said to involve a straight exchange of stock with one share of CUC to be worth 0.3 share of Sears common.

Based on the Oct. 31 closing price of Sears stock, the CUC holder would have received about \$21 per share on the exchange.

CUC has been losing money for the last 1-1/2 years. From a base of System/340 software and books on the same subject, the company attempted to diversify into education with a series of seminars, and into commercial programming and some facilities management.

These latter efforts were money losers and have been shut

down with the exception of some applications packages, which are being marketed, and the facilities management operation.

Sears says that the approval of its board has been deferred, pending a further review of CUC's operations, technical capabilities, and audited financial statements just made available. Sears' chairman, Gordon Metcalf, said that continued interest in acquiring stock of Computer Usage would be contingent upon completion of the review, and that the Sears offer might be made in the form of a cash tender rather than an exchange of stock.

The original plan was said to involve the acquisition of between 65% and 81% of the outstanding common stock of CUC.

Computer Usage Co. reported in its last financial statement that for the year ended Sept. 30, 1969, the company lost \$1,536,586 on revenues of \$11,466,202.

During the 1968 fiscal year, an operating loss of \$485,041 was incurred on revenues of \$13,606,996. The comparison

Scientific Control Seeks Court Protection From Creditor Suits

DALLAS—Scientific Control Corp. said a petition has been filed for an arrangement with its unsecured creditors under the National Bankruptcy Act, Chapter 11.

In Chapter 11 proceedings, a company tries to continue in business with court protection

against creditor lawsuits while it works on a plan to pay its debts.

The company expects to submit a plan to the creditors within a short time, and anticipates the continuation of business operations.

Scientific Control became publicly traded in December, 1967, at about \$7.50 a share. In 1968 it reached a high of \$68 a share. Last week, however, large losses plus management changes caused the stock to fall to about \$12 a share.

Martin Gane

Personnel changes included the resignation of SCC's chairman and chief executive officer, Patrick S. Martin. Due to his "explosive personality," Martin felt "it might aid the financing of the company if he weren't associated with the company."

On Nov. 10, the company said it had lost about 25% of its work force of 1,000 persons. This cutback was to improve the company's revenue-to-expense ratio.

For the first quarter ended

July 31, SCC had a net loss of \$1.6 million on sales of \$2.5 million, compared with a year-earlier gain of \$69,499, or six cents a share, on sales of \$2.2 million.

For the fiscal year ended last April 30, the company reported a loss of \$1.6 million on sales of \$6.9 million, compared with a loss in fiscal 1968 of \$21,755 on sales of \$4 million.

Martin stated that in October, "substantial factors in the loss were \$1.3 million SCC spent on product development and the \$1.2 million expended in organizing and staffing a national marketing team." At that time, he believed "fiscal 1970 would show considerable improvement."

In October, SCC filed suit against Control Data Corp., Minneapolis, and Commercial Credit Business Loans Inc., a CDC subsidiary, charging breach of contract and fraud. The suit seeks \$41 million in damages. The suit stemmed from cancellation of a \$4.5 million loan from Commercial Credit.

UCC Bids For LTV's Computer Technology

DALLAS—LTV Aerospace Corp. said it was negotiating for the sale of its Computer Technology Inc. subsidiary to University Computing Co.

This announcement follows the cancellation of a proposed sale of LTV's interest in Computer Technology to Prudential Insurance Co. of America.

LTV, a subsidiary of Ling-Temco-Vought Inc., presently owns 71% of Computer Technology's outstanding shares, or four million of the 5,628,000 shares.

Terms of the sale call for UCC to acquire about half of LTV's holdings of Computer Technology for an undetermined amount of cash and other considerations.

The sale of stock to UCC would be followed by a merger of Computer Technology into University Computing. UCC would exchange one of its shares for every 4.4 shares of Computer Technology common.

The companies did not indicate

the value of the sale and stock exchange. However, during LTV's earlier negotiations with Prudential for the sale of all of its Computer Technology stock, the value of that exchange was put at about \$40 million.

LTV and UCC said they expect their boards will be asked to authorize execution of definitive agreements soon. They said the agreements would be subject to "satisfaction of various requirements."

Hudson Hits Record Earnings, Revenues

NEW YORK—Hudson Leasing Corp. achieved record revenues and earnings for its first fiscal quarter ended Sept. 30.

Jay B. Langner, president of the broad-based leasing company, noted that among the factors contributing to the improved revenues and earnings for the quarter was increasing profits

from the agreements that Hudson has with Telex Corp.

In March 1969, Hudson and Telex agreed to lease jointly computer tape drives manufactured by Telex. Hudson acquired a one-third interest in the tape drives which have a purchase price of about \$20,000. Leases will run for a period of from one

to five years.

Hudson also agreed to make \$50 million available to Telex, over a four-year period, to implement an operation of Telex's leasing program for disk drives.

Commenting on the outlook for the fiscal year to end June 30, 1970, Langner said, "that barring any major distortion in the economy, we expect fiscal 1970 to be another excellent year for Hudson with revenues, total income, and per share earnings all at record levels."

Revenues were \$5,352,032 compared with \$3,613,837 in the first quarter of fiscal 1969. This represents a gain of 48%.

Net earnings were \$625,301, or 41 cents a share, compared with \$244,626, or 24 cents a share, for the same period last year. These are increases of 156% and 71% respectively.

Per share earnings are based on 1,534,121 average shares of common stock and common equivalents outstanding during the quarter compared with 999,903 shares outstanding a year ago.

NEW YORK—Computer short interest on the New York and American Stock Exchanges fell last month, ending Nov. 14.

Short interest on selected computer stocks on the NYSE decreased to 2,251 shares from 1,771,429 to 1,719 shares.

On the American, the decrease was 44,376 shares, from 573,325 to 529,349.

The short interest is the number of shares not repurchased for return to lenders and represents a definite backlog of potential buy orders.

The seller generally anticipates a price drop that will enable him to repurchase an equal number of shares at a lower price.

The following tables show the New York and American computer stocks in which a short position of at least 20,000 shares existed on Nov. 14, or in which there was a short position change of at least 10,000 shares since October.

NEW YORK STOCK EXCHANGE

Amer Research 11:46-90 10:59-70
Data 80:31 82:37

Amper Corp	43,343	45,456
Bunker Ramo Corp	33,351	23,296
Burroughs Corp	45,352	58,480
Computer Sciences	123,169	122,325
Convex Corp	11,192	17,789
General Electric	21,670	33,924
IBM	136,400	19,781
IBM	61,700	25,219
Proct. Elec.	124,515	102,126
Radio Shack	9,200	13,800
Sperry Rand	48,227	41,481
Nat Cash Register	28,407	30,207
Planning Research Corp	77,028	77,648
RCA Corp	28,234	41,073
Raytheon Co	103,771	164,009
Sander Assoc	8,932	52,887
Return Co	1,000	1,900
Scientific Resources	27,869	23,963
Spartan Rand	164,073	164,547
University Com	71,486	32,950
Varian Associates	48,227	41,481
Xerox Corp	36,718	44,332

AMERICAN STOCK EXCHANGE

Airco	11:14-49	10:15-49
Airco	26,812	30,568
Computer Int'l Group	29,400	18,000
Delta Corp	71,889	11,127
Fin Gen	47,449	45,992
Digital Equip	66,522	40,479
IBM	67,723	1,090
Leasco Data Sys	75,418	60,663
Lockport Corp	47,992	70,070
Mils	50,813	123,800
Perkin Elmer	11:4-34	10:34
Mohawk Data Sys	53,318	52,108



"We've Just Got to Take Time One of These Days to Find New Speed"



New housing development.

It's the new National Data Reference Control System, the simplest, most complete record-keeping system ever designed for computer printouts!



Here, for the first time, is a total housing system of data binders and compatible hanging devices and accessories fully integrated with a complete selection of floor and desk-top referral and retention units. No more improvised binding or hanging methods, no more make-shift storage arrangements.

The heart of the new system is National's exclusive Hang-A-Ref™ Binder designed to simplify the binding and hanging of burst and unburst printouts. A unique sliding hook extends to hold the binder in suspension or slides back into the binder

for easy carrying and reference. A secondary connector unit called Slide-A-Ref™ is used in tandem with the versatile binder to provide easy hanging and to permit users to slide bound printouts in and out of desk or floor storage stations.

The National Control Rack 900™ Series of attractive, sturdy floor and



desk-top storage units is engineered to provide maximum flexibility in setting up modular control stations to meet every record-keeping requirement. The series includes both skeletal and fully enclosed locking units as well as a sturdy connecting unit called Connect-A-Ref™ which enables users to link various combinations of floor racks.



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Company

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NATIONAL BLANK BOOK COMPANY, INC.

A Subsidiary of Dennison Manufacturing Company

Orders and Installations

Two Mexico City operations will soon be using Control Data 935 document readers to solve paperwork problems. The Mexican Institute for Social Security will use its reader to control inventory in its state-regulated pharmacies, while the Mexican Power and Light Co. will use its system for meter reading and general accounting.

Weismantel Associates, Inc., St. Paul, Minn., has received an order valued at more than \$2,250,000 from University

Computing Co. of Dallas. The systems to be delivered consist of large-scale computer equipment that will be used in their multinational computer utility network.

Amelco Semiconductor, a Teledyne Co. of Mountain View, Calif., has installed a Burroughs B3500. The \$458,000 system is used mainly for monitoring work-in-progress, general accounting, and order entry, currently being written.

Newell Industries has accepted

an order for delivery of its AV15000R magnetic tape recorder/reproduce system from Edgerton Gersthausen & Order, Inc. The recorder will become part of the instrumentation system at an Atomic Energy

Ampex Receives \$1.8 Million

Transport Order

Ampex Corp. has received a \$1.8 million order to supply magnetic tape transports to Western Electric Co., New York City, for use in automatic electronic switching system (ESS) centers being installed for the Bell Telephone system in the U.S.

Robert R. Owen, Ampex vice-president—general manager, instrumentation division, said the transports are especially designed for ESS, a network of automatic electronic circuitry that provides a new range of conveniences for the telephone user. Two of the transports are currently used in each of the 60 ESS offices where this system has permitted expansion or replaced conventional telephone-exchange equipment.

Ampex has supplied tape transports for the system since 1965. ESS is expected to become fully operational in more than 400 cities over the next few decades.

In each ESS installation, an automatic message accounting system uses the tape transports to record billing details on extra-charge calls in computer-compatible format. The tapes are later played back into computers for preparation of individual telephone bills.

Commission test facility.

International Computers Ltd. of London has announced orders for three systems. The University of Bristol will utilize an ICL 4-75 in a network that will link five universities. The Aberdeen County Council and the Aberdeen Corp. have each ordered ICL 1902As for financial and proposed technical applications.

The Inglewood, Calif., facilities of Computer Communications, Inc. have installed an IBM 360/30 and a third IBM 1130. They have also placed on order three IBM 360/40s to be used in

the development of an on-line brokerage system, a multiple-service time-sharing system, and a communications access package for use with the IBM 360.

Commercial and Scientific Data Control Ltd., a Calgary-based computer service bureau, has leased a large-scale optical character recognition system from Recognition Equipment Inc. in Dallas. The system optically reads information directly from source documents, translates that data into computer language, and then records it on magnetic tape for immediate computer processing.

Is your computer hungry for data?

Languishing in key punch?

Use our optical input service... direct from typed page to computer. We provide you with formatted 7 or 9 channel, 200, 556, or 800 BPI magnetic tape.

Need a scanning typewriter?

We have 30 to loan you today (if you hurry!).

Got a conversion?

Our input systems group will do it to meet your timetable and requirements!

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Fortune Coronado Tower, El Paso, Texas 79912
DON DABRY, General Sales Manager 915 584 1168

New Issue

All these shares having been sold,
this announcement appears as a matter of record only.



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New Kranzley & Co. Center to Meet Needs of Banks

CHERRY HILL, N.J. — Arthur S. Kranzley & Co., a management consulting firm, has announced plans to establish its first computer facility, the Bankserv Systems Management Center.

Dedicated to the information processing needs of banks in the tri-state Philadelphia area, the center will provide two types of services: complete operational service to banks entering the growing charge card business; and a full range of consulting and computer services involving other bank applications and information processing requirements.

The center will be put into operation in the first quarter of 1970.

A company spokesman said that the center will provide 30-second credit authorization and be capable of handling both local and national interchange accounting for independent, Interbank, Master Charge, and BankAmericard plans.

Bankserv computer facility is fully equipped to handle bank charge card operations. It utilizes software systems developed by the management consulting firm and now serves more than 1,200 banks in the U.S. and around the world.

Bankserv, a registered trade name, has been used to identify a number of proprietary programmed systems developed by Arthur S. Kranzley & Co. in its consulting experience with major banks. Primarily used in charge card accounting, these systems also are used for check credit, installment loan, time deposit certificates, and other major bank applications. All Bankserv systems will be made available to banks for use at the new center or on the bank's own computer system.

Varian Establishes Canadian Computer Group

GEORGE TOWN, Ontario — Varian Data Machines has established a computer group in Canada to improve service to its Canadian customers.

The firm's line of small digital computers, memories, and data concentrators will now be handled through Varian Associates of Canada Ltd. with headquarters at 45 River Road, Georgetown, Ontario, Canada. Additional facilities are to be established throughout the country in the near future.

Besides offering the complete Varian Data Machines product line in Canada, customer support facilities are being established.

Varian's line of small, general purpose digital computers includes the 620/j and the new, smaller 520/j. Many of these computers have been sold to

date for applications including use in time-sharing networks, batch terminals, data systems for scientific instruments, and industrial controls.

SDA Opens OCR Service Bureau in D.C. Area

CHEVERLY, Md. — SDA Corp. has announced the opening of an optical character recognition (OCR) service bureau at 6425 Landover Road. The company expects to locate other OCR data conversion centers in the Washington, D.C. area.

Expansions

According to a company spokesman, SDA will provide management and systems consulting for customers seeking conversion from keypunch input to optical scanning, typing of data on a special project or a contract basis, and conversion of data to magnetic tape on the company's 915 page reader.

The company also plans to conduct training courses in the preparation of data.

Other Expansions

Access Systems has announced that remote batch and conversational processing capabilities of its Univac 1108 (with Exec 8 operating system) are now available through a remote terminal facility at 1 Palmer Square, Princeton, N.J.

Alphanumeric, Inc. has announced that agreement has been reached with two French companies for the establishment and operation of photocomposition service centers in Europe. The joint venture, to be called

Alphanumeric Composition Services, is expected to be in operation early in 1970. The companies engaged in this joint venture are Compagnie Bancrite and Compagnie Generale d'Automatisme.

CT&E Data Services has announced that a new data processing center is being built in Everett, Wash. The center will serve the data processing requirements for customers of the company in the northwestern states of Washington, Oregon, and Idaho.

If you just upgraded to a \$3,500 a month computer which has the most comprehensive software, the widest range of hardware and an outstanding price/performance ratio ...



Congratulations!
You're the proud owner
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If you don't have our computer, chances are you didn't investigate the GE-100 Line.

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GENERAL  ELECTRIC

Contracts

Harris-Interbyte Corp. has awarded a contract to Aspen Computer, Inc., a subsidiary of Aspen Systems Corp., to provide special software and maintenance of the Fototronic-KRT typewriter for between \$200,000 and \$500,000 over the next three years.

Under a \$500,000 contract, Princeton Time Sharing Services of Princeton, N.J., will handle the system programming, installation, and facility operation of a custom time-sharing system for stock portfolio management for DWR Systems, Inc. of Paoli, Pa.

Ultronic System Corp., a subsidiary of Sylvania Electric Products, Inc., has announced the receipt of a \$548,000 contract to supply data communications equipment to Compagnie Internationale de Teleinformatique of Paris. The contract will exceed \$1 million over a three-year period.

An \$800,000 contract has been awarded to Genico Technology Corp. by Lockheed Aircraft Corp. to supply the analog tape recorders to be used on the S-3A aircraft, which is an integral part of the U.S. Navy's new antisubmarine warfare system. In addition, options were committed for equipment to be delivered through 1974 totaling more than \$7 million.

Casius Data Products has been awarded a two-year contract from the systems division of Hewlett-Packard for the 1101 disk drives that will be used primarily in an avionics checkout system. The initial contract is valued at over \$500,000.

Under a \$150,000 contract, Cambridge Computer Associates, Inc. of Cambridge, Mass., will design a multiprocessor, multi-access, graphically oriented time-sharing system for Nasa Electronics Research Center in Cambridge. The system will be utilized by researchers investigating the mechanisms and techniques of man-machine communication.

Under a \$67,000 contract, Informatics Inc. will design and

implement a physics literature information-retrieval system for the American Institute of Physics. The system, which will be coordinated through Informatics headquarters in Bethesda, Md., will enable physicists to rapidly obtain information in their specialty from the mass of physics literature handled by the system.

A contract in excess of \$450,000 has been awarded to Computer Memory Devices, Inc., of Glendale, Ariz., for their new MD-2101 mono disk drives from Digital Scientific Corp., San Diego, Calif. The drives, which utilize the removable IBM 2315 disk pack or equivalent, will be used with Digital Scientific's new Meta-4 that features a patented read-only memory.

NOTICE OF ADVERTISING RATE INCREASE

Because of increased circulation (up over 30%) in 12 months, and to meet increased production and distribution costs, and to continue the improvement and expansion of our editorial and news coverage of the computer industry, we are announcing a rate increase effective January 1, 1970. The increase averages less than 20% over our current rates. This keeps CW the most cost effective medium in the industry, the most frequently read, and the most timely publication.

Contracts received by Computerworld prior to October 15, 1969, will be protected under existing rates for the duration of the contract. Contracts received between October 15, 1969, and December 31, 1969, will be billed under Rate Card No. 4 until Dec. 31, 1969, at which time they will transfer to Rate Card No. 5 and maintain their lineage rate basis.

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New Registrations

NOVATRONICS CO., INC., 811 Ivy Hill Road, Philadelphia, Pa., has announced principally in the design, manufacture, and sale of electronic data acquisition equipment and systems, filed to register 300,000 shares of common stock. Proceeds, at \$1 per share, will be added to the company's general fund and used for general corporate purposes. The underwriter is Kuehn & Co., Inc., 26 Broadway, New York, N.Y. 10004.

WESTER COMPUTER CORP., 1 Pedanaram Road, Danbury, Conn. 06810, a company engaged in developing and marketing generalized computer programs, operating a data processing bureau, a computer programming school, conducting an active search service, and operating a computer brokerage service, filed to register 100,000 shares of common stock. Proceeds, at \$10 per share, intended for developing proprietary computer programs, establishing branch offices in Chicago, Houston, Los Angeles, San Francisco, and New York; renting an IBM 360 for a term of 12 months; repaying certain notes, and for working capital. The underwriter is Max Zarkin & Associates, Inc., 7942 Wisconsin Ave., Bethesda, Md.

POTTER INSTRUMENT CO., INC., E. Bethpage Road, Plainville, N.Y. 11802, a company primarily engaged in the design, manufacture, and sale of peripheral equipment for use with digital computers in electronic data processing, filed to register 300,000 shares of common stock. Proceeds, at \$4 per share, intended to be applied as an initial investment in a new subsidiary to repay short-term bank borrowings; to be added to working capital. The underwriter is The First Boston Corp., 20 Exchange Place, New York, N.Y.

ATHLETIC COMPUTER DEVICES, INC., 52 Broadway, Greenleaf, N.Y., a company that intends to develop and market a portable digital computing device primarily for statistical analysis of athletic events, filed to register 150,000 shares of common stock. Proceeds, at \$1.75 per share, intended for tooling, designing, and production start-up costs for advertisements and marketing for purchase of a computer program and computer time; for salaries and working capital. The underwriter is First Investors Corp., 3000 Westwood Turnpike, Levittown, N.Y. 11756.

"As a result of the computer manufacturer's separate pricing policy, SCORE will eliminate the need to purchase file to file utilities. We will therefore realize savings we had not anticipated."

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"I estimate systems can be implemented from 40% to 50% sooner with SCORE."

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"The COBOL feature is most useful. Modification of a program already prepared requires far less time than writing it from scratch. Our savings so far in the use of SCORE have exceeded our expectations."

Wyandotte Chemicals Corp.
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"The average turn-around time for six job requests was two hours. The programmer assigned to these projects stated that with more experience he could produce the desired results in less time."

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All other areas contact

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51 Madison Avenue
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Atlantic Software Inc.

Lafayette Building, 5th & Chestnut Sts.
Philadelphia, Pa. 19106

Earnings Reports

APPLIED DATA RESEARCH

Three Months Ended Sept. 30

	1969	1968
Shr Emd	8.06	8.10
Revenue	1,610,326	1,261,720
Earnings	75,364	90,291
9 Mo Shr	.16	.23
Revenue	4,656,131	3,307,735
Earnings	152,891	206,110

a-Figures were adjusted to reflect an acquisition.

BOISE CASCADE CORP.

Nine Months Ended Sept. 30

	1969	1968
Shr Emd	\$82.19	\$91.95
Revenue	\$97,560,000	\$95,600,000
Earnings	\$8,270,000	\$4,870,000

a-Based on average shares outstanding, including contingent issues considered equivalent to common stock and the shares to be issued as a result of the 2% stock dividend declared in July, 1969. b-Related to include the operating results of companies acquired since Sept. 30, 1968, and to reflect the merger with Ebasco Industries Inc. on Aug. 31, 1969, which transactions were accounted for as poolings of interest.

COMPUTERMARKETING SERVICES CORP.

Nine Months Ended Sept. 30

	1969	1968
Shr Emd	8.13	8.10
Revenue	1,767,370	1,549,538
Earnings	126,932	104,105

COMPUTER PROPERTY CORP.

Three Months Ended Sept. 30

	1969	1968
Shr Emd	8.14	8.09
Revenue	949,000	581,000
Earnings	94,000	33,000
9 Mo Shr	.24	.45
Revenue	2,549,000	1,820,000
Earnings	364,000	181,000

a-Related to include acquisition of List Management, Inc. on a pooling of interest basis; b-This report is unaudited.

COMPUTER TECHNOLOGY, INC.

Three Months Ended Sept. 28

	1969	1968
Shr Emd	8.08	8.08
Revenue	18,664,000	18,664,000
Earnings	450,000	450,000
9 Mo Shr	.24	.24
Revenue	50,533,000	50,533,000
Earnings	1,332,000	1,332,000

a-Comparable figures not available; the company was formed in August, 1968. Pro forma share earnings, assuming exercise of all common stock purchase options and warrants, were seven cents in the quarter and 21 cents in the nine months.

ODATATRON INC.

Three Months Ended Sept. 30

	1969	1968
Shr Emd	8.105	8.025
Revenue	939,561	319,332
Earnings	78,094	12,750

a-Includes Orbit Electronics, Inc. booked on "purchase" basis July 14, 1969.

FACTSYSTEM INC.

Nine Months Ended Sept. 30

	1969	1968
Shr Emd	8.33	8.30
(Loss)	488,563	29,591
Earnings	(Loss)	191,617
		(123,342)

a-This report is unaudited.

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INFOTRONICS CORP.

Six Months Ended Sept. 30

	1969	1968
Shr Emd	8.18	8.13
Revenue	3,218,793	2,515,716
Earnings	161,200	114,596

MEMOREX CORP.

Nine Months Ended Sept. 30

	1969	1968
Shr Emd	81.31	8.83
Revenue	64,834,000	39,956,000
Earnings	4,824,000	3,020,000

PLANNING RESEARCH CORP.

Three Months Ended Sept. 30

	1969	1968
Shr Emd	8.16	8.12
Revenue	14,647,208	12,761,900
Earnings	731,648	574,563

a-Related to reflect acquisition of a pooling-of-interest basis; b-Based on

4,712,241 shares outstanding as of Sept. 30, 1969.

MIO-CON INC.

Three Months Ended Sept. 30

	1969	1968
Shr Emd	8.22	8.22
Revenue	9,795,925	10,426,183
Earnings	410,058	405,221

SCAM INSTRUMENT CORP.

Three Months Ended Sept. 30

	1969	1968
Shr Emd	(Loss)	8.31
Revenue	2,625,720	2,621,211
Earnings	(Loss)	(411,102)

a-This report is unaudited. Net income for the three-month period ended Sept. 30, 1969, and Sept. 30, 1968, reflects losses of \$232,190 and \$60,584, net of tax benefits, respectively, of Medelco, Inc. During

April and May, 1969, Scam acquired approximately 51% of the outstanding common stock of Riley Stoker Corp.

TECHNICAL TAPE INC.

Nine Months Ended Sept. 27

	1969	1968
Shr Emd	88.17	8.05
Revenue	20,670,000	19,685,000
Spec Chg
Earnings	(Loss)	465,192

a-Loss from discontinuance of product lines; b-Based on average shares outstanding during the period, assuming full conversion of preferred stock.

COMPUTER INDUSTRIES, INC.

Nine Months Ended Sept. 30

	1969	1968
Shr Emd	8.27	8.16
Revenue	11,070,800	7,546,000
Earnings	1,070,800	608,000

QUASAR MICROSYSTEMS INC.

Year Ended June 30

	1969	1968
Shr Emd	8.05	8.05
Revenue	355,307	257,632
Earnings	439,528	433,069

a-Based on the weighted average number of shares outstanding during each year, after giving retroactive effect to the recapitalization on Sept. 11, 1968. Shares issuable with respect to outstanding stock options and warrants have no dilutive on earnings per share.

COMPUTER INVESTORS GROUP

Six Months Ended Sept. 30

	1969	1968
Shr Emd	8.22	8.14
Revenue	3,417,628	1,955,490
Earnings	413,661	231,004

a-Assumes the exercise of warrants.

1401 TO S/360 CONVERSION - FREE -

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is a unique set of proprietary software packages developed by CPU Management Advisory Corp.* which enables you to convert your second generation programs into 100% operational System/360 programs quickly, efficiently and economically.

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Data processing Consultants to Government and Industry for over 5 years.

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED NOV. 21, 1967

COMPUTER SYSTEMS					WEEK		WEEK		
EXCH	RANGE	CLOSING	PRICE		NET	CHG	NET	CHG	
N 147-150	153	BURROUGHS CORP.			+ 2 3/8	-7.75			
N 49-50	48 3/4	COLLINS RADIO			+ 3/4	-17.57			
N 159-161	111	CONTROL DATA CORP.			+ 3 5/8	-5.16			
A 169-50	91 1/4	DIGITAL EQUIPMENT			+ 7 1/8	-12.55			
N 85-13	13 3/4	ELECTRONIC ASSOC.			-1	-5.97			
N 162-163	162	GEN. ELECTRIC			+ 1/2	-1.00			
N 114-75	180 1/4	HEWLETT-PACKARD CO.			+ 1 1/4	-4.87			
N 157-167	164 1/2	MONTWELL INC.			+ 1/4	-5.06			
N 348-391	551	IBM			+10	-3.51			
N 157-166	158 1/2	IBM			+ 1/2	-1.15			
N 46-35	38 1/4	IBM			+ 1/2	-1.15			
N 58-58	58 1/4	RAYTHEON CO.			+1	-2.68			
D 43-11	11 3/4	SCT. CONTROL CORP.			+ 1/4	-34.70			
N 25-38	43 1/8	SPEER RANG			+2	-4.43			
A 58-58	44 1/4	SYSTEMS ENG. LABS.			+ 1/2	-5.23			

PERIPHERALS & SUBSYSTEMS					WEEK		WEEK		
EXCH	RANGE	CLOSING	PRICE		NET	CHG	NET	CHG	
N 55-59	45 1/8	ADDRESSOGRAPH-NELT.			+ 6 1/8	-1.08			
O 71-15	15 1/2	ALPHAMERIC			+ 1/2	-1.74			
N 47-50	48 1/2	AMPER CORP.			+ 5 5/8	-1.88			
O 19-19	14 3/4	BOLT-BERKMAN & NEW			+ 1/2	-5.58			
N 17-19	13 1/2	BURKE-BRAND			+ 3/4	-7.58			
A 37-18	20 1/8	CALCOMP			+ 3 3/4	-7.55			
N 38-14	14	COMIN TRONICS			+ 1/2	-10.76			
A 14-7	11 1/8	COMPUTER EQUIPMENT			+ 1/2	-1.68			
N 29-19	19 1/2	DATA PRODUCTS CORP.			+ 1/2	-7.40			
O 22-15	15 1/2	DELTA SYSTEMS			+ 1/2	-3.63			
N 83-42	42 1/8	ELCOTEC			+ 1/2	-2.39			
N 18-7	7 1/2	FABRI-TEL			+ 3/8	-4.76			
O 37-13	18	FARINASTO			+ 1/2	-7.40			
N 21-18	15 1/2	INFORMATION OIS			+ 3	-14.59			
A 61-17	45 5/8	ILICO ELECTRONICS			+ 5 1/8	-2.13			
N 80-35	35 1/2	INSTRON EQUIP			+ 1/2	-1.44			
O 118-40	39	OPTICAL SCANNING			+ 3	-7.49			
N 51-18	18 5/8	PHOTON			+ 1 1/4	-5.54			
A 44-23	34	PROTEC INSTRUMENT			+ 3	-7.49			
N 72-34	34 1/2	RESEARCH ASSOCIATES			+ 1/2	-1.14			
N 41-22	25 5/8	SAWNET ASSOCIATES			+ 3	-18.77			
O 55-09	9	SEAL			+ 1/2	-5.14			
O 34-16	16 5/8	TALLY CORP.			+2	-9.89			
N 115-85	182 1/4	VERDOL CORP.			+ 2 5/8	-5.21			

SUPPLIES & ACCESSORIES					WEEK		WEEK		
EXCH	RANGE	CLOSING	PRICE		NET	CHG	NET	CHG	
O 47-31	31 1/2	ACME VISITEL			+ 1 1/2	-3.68			
O 82-11	11 1/2	ADAM-VALLEY			+ 1 1/2	-4.80			
O 27-23	23 1/2	BALTIMORE BUS FORM.			+ 1 1/4	-1.97			
O 19-6	6 1/2	BARBY UNIT			+ 2 1/2	-7.72			
O 44-21	24 1/2	DATA DOCUMENTS			+1	-2.89			
N 40-28	28 1/2	DATA RST. FORMS			+ 1/2	-1.58			
N 172-43	132 1/8	HEWLETT			+ 4 1/2	-8.97			
N 118-44	44 1/2	IBM COMPANY			+ 3/8	-1.83			
O 37-29	29 1/2	IBM BUS FORMS			+ 1/2	-1.83			
O 40-36	36 1/2	IBM COMPANY			+ 2 1/8	-8.88			
N 48-38	38 1/2	IBM COMPANY			+ 1/2	-1.83			
O 31-23	23 1/2	STANDARD REGISTER			+ 1 1/4	-4.58			
N 54-25	25 1/2	UNIDATA			+ 1/4	-5.74			
A 28-18	18 5/8	WABASH MAGNETICS			+ 1 1/4	-6.74			
O 37-28	28 1/2	WELLSIDE BUS FORMS			+ 1/2	-5.71			

SOFTWARE & ERP SERVICES					WEEK		WEEK		
EXCH	RANGE	CLOSING	PRICE		NET	CHG	NET	CHG	
A 33-19	21 1/8	APPLIED DATA RES.			+ 1/8	-2.85			
O 14-5	5 1/8	ADVANCED COMP TECH			+ 3/4	-12.89			
O 19-6	6 1/2	BARBY UNIT			+ 2 1/2	-7.72			
A 188-43	185 1/2	AUTOMATIC DATA PROC.			+ 1/8	-6.74			
O 15-6	6 1/2	AUTO INCHES			+ 1/2	-3.57			
O 17-7	7 3/4	BRANTON APPL. SYS.			+ 1 3/4	-15.79			
A 21-9	9	COMPUTER APPL.			+ 1/2	-4.88			
O 14-6	12 1/2	COMPUTER ENVIRON			+ 2 1/2	-16.87			
O 47-14	18	COMPUTER NETWORK			+ 1/2	-2.78			
N 24-12	12 1/2	COMPUTER SCIENCES			+ 3/4	-10.88			
O 48-8	8 1/2	COMPUTER USAGE			+ 1 1/2	-2.11			
A 75-37	48 3/4	COMPUTING & SORT			+ 1/2	-8.19			
O 24-4	4	DATA ANALYSIS			+ 5 1/4	-14.79			
O 17-6	6 3/4	DATAWAY			+ 1 1/4	-5.57			
O 15-4	4 3/4	DELTA			+ 1/2	-8.86			
N 38-19	19 1/2	DELTA CORP. PROD.			+ 1/2	-1.15			
O 38-10	10 1/4	INFORMATICS			+ 3/4	-3.75			
O 19-6	6 1/2	INSTRON EQUIP			+ 1 1/2	-5.80			
O 82-4	4 3/4	NAT. COMP. ANALYSTS			+ 1	-10.98			
N 128-83	83 1/4	PLANNING RESEARCH			+ 1/2	-12.19			
A 11-4	4 3/4	PROGRAMMING & SYS.			+ 5/8	-7.79			
O 18-3	3 1/4	SOFTWARE SYSTEMS			+ 1/2	-5.35			
O 27-3	3 3/8	STRATEGIC SYS.			+ 1/2	-5.35			
O 14-11	11 1/2	TBS COMP. CENT. INC.			+ 1/4	-11.21			
N 111-3	3 1/2	UNIDATA			+ 1 1/2	-25.80			
N 56-44	44 1/2	UNIVERSITY COMP.			+ 1/2	-15.87			
O 38-20	20 1/2	U.S. TIME SHARING			+ 1/2	-6.78			
O 14-7	7 1/4	U.S. TIME SHARING			+ 1/2	-5.71			

LEASING COMPANIES					WEEK		WEEK	
EXCH	RANGE	CLOSING	PRICE		NET	CHG	NET	CHG
O 14-8 <td>8 3/4<td>BANISTER CORP.<td></td><td></td><td>+ 1/2</td><td>-4.88</td><td></td><td></td></td></td>	8 3/4 <td>BANISTER CORP.<td></td><td></td><td>+ 1/2</td><td>-4.88</td><td></td><td></td></td>	BANISTER CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-4.88</td> <td></td> <td></td>			+ 1/2	-4.88		
N 45-14 <td>14</td> <td>BOOTH COMPUTER<td></td><td></td><td>+ 4</td><td>-13.79</td><td></td><td></td></td>	14	BOOTH COMPUTER <td></td> <td></td> <td>+ 4</td> <td>-13.79</td> <td></td> <td></td>			+ 4	-13.79		
O 16-8 <td>8 1/4</td> <td>COMPUTER EXCHANGE<td></td><td></td><td>+ 2 1/8</td><td>-15.44</td><td></td><td></td></td>	8 1/4	COMPUTER EXCHANGE <td></td> <td></td> <td>+ 2 1/8</td> <td>-15.44</td> <td></td> <td></td>			+ 2 1/8	-15.44		
A 34-18 <td>18 3/4</td> <td>COMPUTER LEASING<td></td><td></td><td>+ 1/2</td><td>-1.58</td><td></td><td></td></td>	18 3/4	COMPUTER LEASING <td></td> <td></td> <td>+ 1/2</td> <td>-1.58</td> <td></td> <td></td>			+ 1/2	-1.58		
O 13-7 <td>7 1/2</td> <td>COMPUTER LEASING<td></td><td></td><td>+ 3 1/2</td><td>-7.79</td><td></td><td></td></td>	7 1/2	COMPUTER LEASING <td></td> <td></td> <td>+ 3 1/2</td> <td>-7.79</td> <td></td> <td></td>			+ 3 1/2	-7.79		
N 48-83 <td>83 1/2</td> <td>DATA PROJ. P & S<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	83 1/2	DATA PROJ. P & S <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA<td></td><td></td><td>+ 1/2</td><td>-8.86</td><td></td><td></td></td>	5 1/2	DELTA <td></td> <td></td> <td>+ 1/2</td> <td>-8.86</td> <td></td> <td></td>			+ 1/2	-8.86		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
A 18-18 <td>18 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	18 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
O 14-5 <td>5 1/2</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	5 1/2	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
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N 54-8 <td>8 1/4</td> <td>DELTA CORP.<td></td><td></td><td>+ 1/2</td><td>-1.15</td><td></td><td></td></td>	8 1/4	DELTA CORP. <td></td> <td></td> <td>+ 1/2</td> <td>-1.15</td> <td></td> <td></td>			+ 1/2	-1.15		
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Acquisitions

Lectro Computer Leasing Corp., New York, has agreed in principle to acquire all of the outstanding shares of Opticon Corp., New Haven, Conn. Terms of the transaction, subject to preparation of a formal agreement and approval by both Lectro's directors and Opticon's shareholders, call for Lectro to issue an undisclosed amount of stock upon closing and an additional amount to be issued in the future contingent upon Opticon's earnings. The merger will be accounted for on a pooling-of-interests basis. Opticon develops and manufactures electro-optical devices used for non-contact tracking of motion of mechanical parts and non-contact extensometer measurements in the material testing fields.

Systems For Advanced Information, Inc., Providence, R.I., a data-processing firm, has acquired 100% of the capital stock of

the J.R. Reilly Co. of Boston, for an undisclosed amount of Systems common stock. The J.R. Reilly Co. is a management consulting firm specializing in the data processing area.

Computer Task Group, Inc., Buffalo, N.Y., a computer services company, has reached an agreement to purchase all of the stock of Paperwork Data-Comm Services, Inc., and Syracuse Micro Film Co., both of Syracuse, N.Y. Paperwork Data-Comm Services operates an IBM 360 data center offering facilities management and computing services throughout central New York. Syracuse Micro Film Co. provides photographic reduction, recording, retrieval, and printing services to clients across New York state and Pennsylvania.

Digital Applications, Inc., New York, has announced the acquisition of the assets and busi-

ness of CDS Electronics, Inc. of Houston, Texas, in exchange for an undisclosed amount of common stock of Digital Applications. CDS manufactures electronic systems based upon either their own design or the detailed specifications of their customers.

Computing and Software, Inc., Los Angeles, has announced the acquisition of Derivation and Tabulation Associates, Inc. of Orange, N.J., for an undisclosed number of shares of common stock. Computing and Software is engaged in the management and operation of computing centers and their application in the field of specialized information exchanges. The firm is also involved in computer software development, computer-related marketing services, data processing training courses, and the manufacture of components for the computer peripheral equipment market. Derivation and Tabulation Associates publishes an assortment of technical reference manuals, microfilm files, and computerized technical information primarily for the electronics industry.

Bunker-Ramo Corp., Oak Brook, Ill., has acquired a majority interest in the French firm Usine Metallurgique Doloise located in Dole, Jura, France. Bunker-Ramo is an international manufacturing company that manufactures and sells or leases computer-based systems and services, knitted deep-pile fabrics, electric signs, and electronic and electrical components and assemblies. Usine Metallurgique Doloise has been the exclusive sales and manufacturing agent for Amphenol products in France for several years under license from Bunker-Ramo Corp. It manufactures many specialty products for telecommunications and test equipment applications.

NN Corp., Milwaukee, Wis., an insurance, financial, and computer services organization, has agreed to purchase the assets of Arthur Wiesenberger Services Corp. of New York. The cash transaction will involve between \$1,250,000 and \$1,750,000, with the exact amount based on final valuation of the Wiesenberger assets. The Wiesenberger firm is a reporter on the mutual fund industry and has been expanding into other areas of financial services and publications.

Falm Information Services, Inc., New York, and Power Computer Systems, Inc., Rutherford, N.J., have announced an understanding in principle, subject to the directors' and stockholders' approval of both companies, to consolidate the two companies. No details were furnished.

Shareholders of Graham Mag-

nettes Inc., Graham, Texas, have disapproved a proposed merger with Scientific Control Corp. of Carrollton, Texas.

Qatron Corp., Washington, D.C., has announced the rescission of the reorganization agreement for the acquisition of Dillon-Pullman, Inc., and Eneco Distributing Corp., both of St. Louis.

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Energy Conversion Names K. Cunningham President

TROY, Mich. — Keith A. Cunningham, a senior executive of the international accounting firm of Touche Ross & Co., has been named president and chief executive officer of Energy Conversion Devices Inc.

Cunningham, a management expert, accountant, and lawyer, is a general partner in Touche Ross, where he holds several top posts, including vice-chairman of the policy group, member of the administrative committee, chairman of the long-range planning committee, and partner-in-

charge of the New York office. The appointment of the new chief executive comes at the beginning of a new phase in the company's development.

Both the company's plant facilities and its staff more than doubled this past year, and plans call for continued expansion.

ECD is presently preparing to introduce for customer evaluation computer memory and display products. A solid-state printing system is also under development.

Richard F. Waid Becomes President Of Compdats Service Corporation

ARLINGTON, Va. — Richard F. Waid has been named president of Compdats Service Corporation, an independent company formed jointly by Auerbach Corp. and Comprehensive Designers, Inc. to provide facility management, planning, and computer programming services in the information field.

Prior to his appointment, Waid was division vice-president, federal systems division of Auerbach Associates, the consulting

branch of Auerbach Corp. Previously, he was a regional vice-president of Recognition Equipment, Inc. and held a series of sales management positions spanning 10 years with IBM.

Compdats, headquartered in Arlington, Va., maintains a network of 25 offices throughout the country. The firm draws upon both parent companies to provide data processing manpower and services tailored to a client's specific requirements.

President, Chief Executive Officer Named at Northwest Services, Inc.

MINNEAPOLIS, Minn. — Frank S. Powell has accepted the position as president and chief executive officer of Northwest Computer Services, Inc., a wholly owned subsidiary of Northwest Bancorp. All other offices of NCS were relocated at the last regular board meeting held Oct. 14.

Powell has been associated with data processing for nearly 20 years. He comes to NCS after serving as manager of the administrative department of the Richfield division of Atlantic Rich-

field Co., Los Angeles. Previously he was employed by Log-Tecno-Voight, the Pillsbury Co., and International Harvester Co.

NCS provides data processing services to "Bancor" affiliated computer centers located in Minneapolis, St. Paul, Duluth, and Rochester, Minnesota; Des Moines and Mason City, Iowa; Omaha, Nebraska; Sioux Falls and Rapid City, South Dakota; Fargo and Bismarck, North Dakota; and Great Falls and Billings, Montana.

M. Volding Returns to Former Post, Chief Executive for Corporation S

DALLAS — Morle J. Volding, senior vice-president of Recognition Equipment Inc., and treasurer and director of Corporation S, has been named acting chief executive officer of Corporation S, a position which he held earlier.

Bernard C. Hogan, president and director of Corporation S, has resigned as chief executive officer, but will remain president of the company for the present, and will continue indefinitely as a Corporation S director.

Mr. Volding has been treasurer and a member of the board of

Corporation S since it was organized in 1967, and throughout the company's existence he has been closely involved with the company's day-to-day operations and its long-range development. He will continue to serve as a senior vice-president of Recognition Equipment.

Corporation S, an affiliate of Recognition Equipment, is a computer services company.

Position Announcements

DATA CONVERSION REPRESENTATIVES

LARGE OVERSEAS DATA CONVERSION FACILITY IS INTERESTED IN ESTABLISHING SALES REPRESENTATIVES IN MAJOR METROPOLITAN AREAS OF UNITED STATES AND CANADA. REPRESENTATIVES SHOULD HAVE KNOWLEDGE OF DATA INPUT PREPARATION VIA KEYPUK, KEY TAPE, TYPESCAN AND BROAD CONTRACTS IN DATA PROCESSING FIELD. REPLY TO CW 302 3121, 60 Austin St., Newton, Mass.



COMPUTERWORLD

EDPeople

C. Fisher Becomes Eeco Director of Engineering

SANTA ANA, Calif. — Electronic Engineering Co. of Calif. (Eeco) has appointed Charles R. Fisher as director of engineering, computer equipment division. Fisher assumes engineering responsibility for the design and development of all computer peripherals and systems, including computer turnkey systems, disk tape units (magnetic bulk storage), and I/O terminal typewriters.

Before joining Eeco, Fisher was director of plans and programs at Viacom Computer Systems Corp. Earlier with Stromberg Datagraphix, Inc., San Diego, Calif., Fisher was director of engineering. In Rochester, N.Y., he was with Stromberg-Carlson Corp., where his positions included chief of advanced development, director of plans and programs, and manager of digital communications laboratory.

In addition to six patents pending, Fisher has twenty patents to his credit. He has authored many articles in national technical magazines.

Henderson Named President of Compuedics, Inc.

WASHINGTON, D.C. — Reid Henderson has been appointed to the presidency of Compuedics, Inc., which provides computer technology courses, management consulting, technical publications, and related services to the EDP community. From 1967 until October of this year, Henderson was part of the professional staff of the Department of Defense Computer Institute in Washington, D.C. He had previously managed the Show Air Force Base computer center in South Carolina, and has taught EDP and management courses at the George Washington University, the Department of Defense Computer Institute, and elsewhere.

EDP Tech. Names Maloney Corporate Vice-President

WASHINGTON, D.C. — James P. Maloney Jr. has been named corporate vice-president of EDP Technology, Inc., a company engaged primarily in developing new systems and techniques for the application of advanced computer technology.

Maloney will be responsible for marketing in the fields of education, health, and state and local government. He will also participate in overall corporate planning, development, and management.

Prior to joining EDP, Maloney had been industry manager, education, for IBM and was responsible for the marketing and development of data processing products and services to the education community. His previous post was assistant to the data processing division vice-president and regional manager for government, education, and

medical marketing and services. In 1966-67 Maloney served as special assistant to the secretary of commerce.

Other Moves

■ Electronic Engineering Co. of Calif. has announced the appointment of Mrs. Betty J. Pierson as manager-programming, Eeco's systems. She will be responsible for design and development of software for Eeco's Computer Corp.

■ George J. Thiergartner has been appointed to the newly created position of director of telecommunications for Astro-data, Inc., Anaheim, Calif.

■ Everett H. Dale has been named staff general manager, product evaluation in the software and engineering division of Control Data Corp., Minneapolis.

■ Walker Finney has been appointed vice-president in charge of Pryor Computer Facilities Management, a new division of Pryor Computer Industries.

Executive Corner

■ Computer Assistance, Inc. of W. Hartford, Conn., has announced the appointment of Michael A. Moroney as manager of technical operations. In his new position, Moroney will be responsible for all technical personnel, project control, and staffing of the W. Hartford office.

■ Computer Data Systems, Inc., Silver Spring, Md., has appointed Richard Van Atta as deputy director of the southern regional office, with headquarters in Tallahassee, Fla. Van Atta will have responsibility for various technical management and marketing efforts in the ten southern states.

■ Sterling Computer Systems Inc., Houston, has announced the appointment of Roy T. Bogan as president of its McGinnis, Hall & Hecht subsidiary.

■ Isaac-Dobbs, Systems, Inc. of Los Angeles has announced the appointment of Geoffrey H. Thomas as vice-president of marketing and customers services.

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Franklin Named President Of Computer Sciences Unit

LOS ANGELES — Marvin J. Franklin has been named president of the information network division of Computer Sciences Corp.

Prior to his promotion, Franklin was vice-president and general manager of the CSC division. He has directed the planning and development activities of the unit since its formation in January, 1969.

CSC established the information network division to market

and operate the time-sharing services of a national network of regional computer centers. The company anticipates that the network will become a major source of revenue and earnings in future years.

Franklin joined Computer Sciences in 1968 after a 13-year association with IBM. While there, he served in a number of assignments concerned with the management of marketing, laboratory, and divisional activities.

Position Announcements

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Director Recap

Endicott Peabody has been elected a director of Scientific Resources Corp., Philadelphia, at a recent meeting of the board of directors.

Peabody was formerly governor of Massachusetts and is now senior partner of Peabody, Rivlin, Kelly, Cladonhos & Lambert attorneys-at-law in Washington, D.C.

David Mason, a former president of Link Aviation, Inc., has been named chairman of the board of directors of Remcom Systems, Inc., Dallas-based manufacturer of computer peripheral equipment. Also named to the board of directors was Lynn

Elliott, a Dallas attorney.

Shareholders of Consolidated Analysis Centers Inc. have elected three new members to the company's board of directors.

Elected at the company's annual meeting to serve one-year terms were: Charles R. Cole Jr., president and chairman, Resource Computer Corp.; Norvell H. Hawkins, president, and Thomas E. Gilroy, executive vice-president, Vendere International Marketing Corp.

Two additions to the board of directors of American Data Services, Inc., Portland computer service and management infor-

mation company, have been announced.

They are Donald L. Tisdell, executive vice-president and treasurer of Northwest Acceptance Corp., of Portland, and vice-president of Orbaco Inc., Portland holding company, and Leroy C. Livermore, controller for Orbaco and Northwest Acceptance Corp.

Simulation Associates, Inc. has elected Dr. John Francis Lubin, professor of industry at the Wharton School, to its board of directors. Lubin was formerly director of the University of Pennsylvania computation center.

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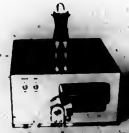
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